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OF

NATURAL HISTORY,

AND

JOURNAL FOR RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, MOLLUSKS,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

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Zoological Miscellany.

Oxygen formed in the Bodies of flesh-eating Animals by the decomposition of Water.—At a late sitting of the Academy of Sciences, at Munich, Baron Liebig stated that by means of a new instrument, contrived for detecting and measuring oxygen in various bodies, he had proved that tolerably large quantities of that important element are formed by decomposition of water in the body of flesh-eating animals. He thinks that the knowledge of this fact will throw quite a new light on the hitherto imperfectly-understood processes of nutrition and digestion.

Pulsations of the Blood increase in number as the size of the Animal diminishes.—In a recent lecture at the Royal Institution, Professor Marshall communicated the result of his researches on the pulse in various animals. By the use of an ingenious apparatus, he found that the pulsations increase in frequency as the size of the animal diminishes. Thus, in the horse they number 55 per minute; in man, 72; in the dog, 96; in the rabbit, 220; and in the squirrel, 300. But, whatever the size, the number of beats required to complete the circulation through the whole body averages 27; and the proportion of the weight of the blood to that of the whole body is as 1 to 12.

Formation of Infusoria in boiled Solutions.—In 'Silliman's Journal' we find a paper of the highest possible interest on the formation of infusorial forms of animal life. No less than thirteen experiments are carefully and clearly described. The solutions were different, but all were boiled for a period varying from fifteen minutes to two hours, in flasks fitted at the mouth with bent glass tubes, and hermetically sealed before cooling. Nothing can exceed the pains taken to preclude the possibility of any ingress of spores or eggs through the instrumentality of the atmosphere. In four instances the contents of the flasks were unchanged, but in thirty-three Bacteriums, Vibrios or other infusorial organisms appeared. In nearly every instance their presence was indicated, in the early stage of the experiments, by the formation of a film, which took place in some on the second day, and in others not until the nineteenth, and was afterwards proved by a careful examination with the microscope. Professor Asa Gray witnessed the opening of some of these flasks, and satisfied himself of the presence of Infusoria in the contents. Vibrios, Bacteriums and Spirillums were the most frequently found, and, in addition to these, either ferment cells, monads or Holpoda-like bodies were seen, some of them having ciliary movements. Those forms which were observed the most frequently are among the lowest, if not the lowest, of all known organisms. The result of the experiments here described is, that the boiled solutions of organic matter made use of, exposed only to air which had passed through tubes heated to redness, or enclosed with air in hermetically sealed vessels, and exposed to boiling water, became the seat of infusorial life.

On the Generation of Acari in a Nitrate of Silver Bath.—A paper, by Dr. Maddox, bearing this title, was read at the May Meeting of the Microscopical Society, but the learned President, in his Annual Address, observes that the facts of the case scarcely support the title of the paper, all that is clearly made out being that the Acari were found in considerabe numbers on the surface of the solution.

Fixity of Species.—Agassiz, in his 'Essay on Classification,' says that it was a great step in the progress of Science when it was ascertained that species have fixed characters, and that they do not change in the course of time. Geology only shows that at different periods there have existed different species; but no transition from those of a preceding, into those of the following, epoch has ever been noticed anywhere: nothing furnishes the slightest argument in favour of their mutability. On the contrary, every modern investigation has gone only to confirm the results first obtained by Cuvier, and his view that species are fixed.

NOTICES OF NEW BOOKS.

'*The Naturalist on the River Amazons.*' By HENRY WALTER BATES. 2 vols 8vo. London: John Murray, Albemarle Street. 1863.

IN the autumn of 1847 Mr. Wallace proposed to Mr. Bates a joint expedition to the River Amazons to make collections of objects in Natural History, dispose of duplicates in London to defray the cost of the expedition, and "gather facts towards solving the question of the origin of species." The first and second of these facts have, I trust, been fully accomplished; with respect to the third, however wide the fame acquired by Mr. Wallace, and Mr. Bates tells us that it has been wide, I incline to believe that the facts gathered and recorded by Mr. Bates will be quite as acceptable to sober, steady-going naturalists like myself as the most interesting hypotheses that may occur to the more lively imagination of my friend Mr. Wallace. In the spring of 1848 the fellow travellers met in London, and in April started on the passage across the Atlantic. Mr. Wallace returned after a sojourn of four years in primæval forests; Mr. Bates stayed seven years longer, returning home in 1859. Mr. Wallace published a narrative of his four years' sojourn under the title of 'Travels on the Amazons and Rio Negro;' Mr. Bates presents us with these two volumes as the record of his eleven years' labours.

It seems strange that four years should have been allowed to elapse after his return before Mr. Bates favoured the public with this record of his observations, but the truth is that he felt diffident of his own powers; doubts as to the value of his materials; and that reluctance which is the characteristic of modest men, to bring himself so prominently before the public. Indeed we are indebted to the solicitations of Mr. Darwin for the publication of the work at all. "Mr. Darwin." says the author, "strongly urged me to write a book, and reminded me of it afterwards, when, after having made a commencement, my half-formed resolution began to give way." I can readily believe how arduous was the task; the labour of collecting materials was a labour of love, the task of dishing up those materials for the public, dreary and wearisome. However, the task is done at last, and done well; and every naturalist will rejoice that a record has been preserved of one of the most interesting expeditions ever undertaken by a naturalist.

The very name of the Amazons, that monarch of rivers, conveys an idea of vastness that can scarcely be enhanced by descriptions, its course extending with its tributaries to more than 10,000 miles; its breadth so great that from the centre of the stream the shores are invisible; the volume of fresh water it pours into the Atlantic so immense as to conquer, overcome and annihilate the saltness of the ocean,—are facts taught us even in our school days, and once taught us are never to be forgotten. Now we have superadded to all this a picture of its banks, verdure descending to the water's edge, and ascending like a living wall two hundred feet above the stream. There is something oppressive in the idea of such a stream and such a forest, something quite as calculated to deter as to invite the traveller; in short, it seems a subject too immense, too boundless, too infinite shall I say, for us to grapple with. There are other features of this scene no less wonderful than its vastness: far more impressive to my mind than any computation of the millions of square miles now in the sole occupation of Nature as virgin forestry, is the power of Nature to reclaim her own when robbed by man. At Parà, for instance, man prevailed for a time, conquered the forest by great efforts, little by little, cleared spaces, marked out roads, squares and gardens, and built houses and churches and market-places; but at this point he quarrelled with himself, had rows and revolutions, and weakened himself and rendered himself incapable of further exertion; then Nature came leaping down upon him with her utmost power, blocked up the squares with superb bananas, covered the market place with forest, and shouted a loud triumphant "ha! ha!" in the hootings of unnumbered frogs and in the howlings of the monkeys, which make the very blood run cold. Now peace and commerce have returned; the plethora, the exuberance of life is again being driven back; and the sounds of music, the ringing of bells, the voices of men are again heard.

But I have ever felt, and still feel, that the only way to treat an author with perfect fairness is to let him speak for himself, and if the passages which I have selected are only as interesting to others as they have been to me, the readers of the 'Zoologist' will enjoy the pages that follow. I take them with the same disregard to classification which the author has himself shown, seeing no necessity for arrangement where the sights and sounds are so diversified and the objects of attraction so numerous.

The Japim.—"Another interesting and common bird was the japim, a species of Cassicus (*C. icteronotus*). It belongs to the same family of birds as our starling, magpie and rook. It has a rich yellow and black plumage, remarkably compact and velvety in texture. The shape of its head and its physiognomy are very similar to those of the magpie; it has light gray eyes which give it the same knowing expression. It is social in its habits, and, like the English rook, builds its nest on trees in the neighbourhood of habitations; but the nests are quite differently constructed, being shaped like purses, two feet in length, and suspended from the slender branches all round the tree, some of them very near the ground. The entrance is on the side near the bottom of the nest. This bird is a great favourite with the Brazilians of Parà. It is a noisy, stirring, babbling creature, passing constantly to and fro, chattering to its comrades, and is very ready at imitating other birds, especially the domestic poultry of the vicinity. There was once a weekly newspaper published at Parà called 'The Japim,' the name being chosen, I suppose, on account of the babbling propensities of the bird. Its eggs are nearly round, and of a bluish white colour, speckled with brown."—(P. 16).

Immediately after this note our traveller philosophizes on the tails of lizards, and I must confess that, duly considered, the readiness with which lizards part with their tails on the instant when that decorative appendage is handled or insulted, I feel very much inclined to agree with Mr. Bates as to their inutility; but surely we must allow Nature the privilege of decoration, and a lizard's tail elevated in the air is doubtless an object of attraction to its mate, if not to phlegmatic man.

Lizard's Tails.—"The tails of lizards seem to be almost useless appendages to the animals. I used often to amuse myself in the suburbs, whilst resting in the verandah of our house during the heat of mid-day, by watching the variegated green, brown and yellow ground lizards. They would come nimbly forward, and commence grubbing with their fore feet and snouts around the roots of herbage, searching for insect larvæ. On the slightest alarm they would scamper off, their tails cocked up in the air as they waddled awkwardly away, evidently an encumbrance to them in their flight."—(P. 17).

From lizards to their insect food is but a step: I therefore only follow Nature, as well as my original, in next quoting his most able account of the Saüba ants, a creature that strips the trees of their leaves to be used in the construction of its habitations, carrying out the propensity of the leafcutter bee to an excess that would be fearful were it not that vegetation is too abundant, too wonderfully reproductive in these regions to be arrested by such puny assailants.

Ants.—"A far more interesting species was the Saüba (*Œcodoma cephalotes*). This ant is seen everywhere about the suburbs, marching to and fro in broad columns. From its habit of despoiling the most valuable cultivated trees of their foliage, it is a great scourge to the Brazilians. In some districts it is so abundant that agriculture is almost impossible, and everywhere complaints are heard of the terrible pest.

"The workers of this species are of three orders, and vary in size from two to seven lines. The true working class of a colony is formed by the small-sized order of workers, the worker-minors as they are called. The two other kinds, whose functions, as we shall see, are not yet properly understood, have enormously swollen and massive heads. In one the head is highly polished, in the other it is hairy and opaque. The worker-minors vary greatly in size, some being double the bulk of others. The entire body is of very solid consistence, and of a pale reddish brown colour. The thorax or middle segment is armed with three pairs of sharp spines; the head has also a pair of similar spines proceeding from the cheeks behind.

"In our first walks we were puzzled to account for large mounds of earth, of a different colour from the surrounding soil, which were thrown up in the plantations and woods. Some of them were very extensive, being forty yards in circumference, but not more than two feet in height. We soon ascertained that these were the work of the Saübas, being the outworks or domes which overlie and protect the entrances to their vast subterranean galleries. On close examination I found the earth of which they are composed to consist of very minute granules, agglomerated without cement, and forming many rows of little ridges and turrets. The difference in colour from the superficial soil of the vicinity is owing to their being formed of the undersoil, brought up from a considerable depth. It is very rarely that the ants are seen at work on these mounds; the entrances seem to be generally closed, only now and then, when some particular work is going on, are the galleries opened. The entrances are small and numerous; in the larger hillocks it would require a great amount of excavation to get at the main galleries, but I succeeded in removing portions of the dome in smaller hillocks, and then I found that the minor entrances converged, at the depth of about two feet, to one broad elaborately worked gallery or mine, which was four or five inches in diameter.

"This habit in the Saüba ant of clipping and carrying away immense quantities of leaves has long been recorded in books on Natural History. When employed on this work their processions look like a multitude of animated leaves on the march. In some places I found an accumulation of such leaves, all circular pieces, about the size of a sixpence, lying on the pathway, unattended by ants, and at some distance from any colony. Such heaps are always found to be removed when the place is revisited the next day.

"In course of time I had plenty of opportunities of seeing them at work. They mount the tree in multitudes, the individuals being all worker-minors. Each one places itself on the surface of the leaf, and cuts with its sharp scissor-like jaws a nearly semicircular incision on the upper side; it then takes the edge between its jaws, and by a sharp jerk detaches the piece. Sometimes they let the leaf drop to the ground, where a little heap accumulates, until carried off by another relay of workers; but generally each marches off with the piece it has operated upon, and as all take the same road to their colony the path they follow becomes in a short time smooth and bare, looking like the impression of a cart wheel through the herbage.

"It is a most interesting sight to see the vast host of busy diminutive labourers occupied on this work. Unfortunately they choose cultivated trees for their purpose. This ant is quite peculiar to Tropical America, as is the entire genus to which it belongs. It sometimes despoils the young trees of species growing wild in its native forests; but it seems to prefer, when within reach, plants imported from other countries, such as the coffee and orange trees. It has not hitherto been shown satisfactorily to what use it applies the leaves. I discovered it only after much time spent in investigation. The leaves are used to thatch the domes which cover the entrances to their subterranean dwellings, thereby protecting from the deluging rains, the young broods in the nests beneath. The larger mounds already described are so extensive that few persons would attempt to remove them for the purpose of examining their interior; but smaller hillocks, covering other entrances to the same system of tunnels and chambers, may be found in sheltered places, and these are always thatched with leaves mingled with granules of earth. The heavily laden workers, each carrying its segment of leaf vertically, the lower edges secured in its mandibles, troop up and cast their burdens on the hillock; another relay of labourers places the leaves in position, covering them with a layer of earthy granules, which are brought one by one from the soil beneath.

"The underground abodes of this wonderful ant are known to be very extensive. The Rev. Hamlet Clark has related that the Saüba of Rio de Janeiro, a species closely allied to ours, has excavated a tunnel under the bed of the river Parahyba at a place where it is as broad as the Thames at London Bridge. At the Magoary rice-mills, near Parà, these ants once pierced the embankment of a large reservoir. The great body of water which it contained escaped before the damage could be repaired. In the Botanic Gardens at Parà an enterprising French gardener tried all he could think of to extirpate the Saüba. With this object he made fires over some of the main entrances to their colonies, and blew the fumes of sulphur down the galleries by means of bellows. I saw the smoke issue from a great number of outlets, one of which was seventy yards distant from the place where the bellows were used. This shows how extensively the underground galleries are ramified.

"Besides injuring and destroying young trees by despoiling them of their foliage, the Saüba ant is troublesome to the inhabitants from its habit of plundering the stores of provisions in houses at night, for it is even more active by night than in the daytime. At first I was inclined to discredit the stories of their entering habitations and carrying off grain by grain the farinha or mandioca meal, the bread of the poorer classes of Brazil. At length, whilst residing at an Indian village on the Tapajos, I had ample proof of the fact. One night my servant woke me three or four hours before sunrise, by calling out that the rats were robbing the farinha baskets; the article at that time was scarce and dear. I got up and listened, and found the noise was very unlike that made by rats; so I took the light and went into the store room, which was close to my sleeping-place. I there found a broad column of Saüba ants, consisting of thousands of individuals, as busy as possible, passing to and fro between the door and my precious baskets. Most of those passing outwards were laden each with a grain of farinha, which was in some cases larger and many times heavier than the bodies of the carriers. Farinha consists of grains of similar size and appearance to the tapioca of our shops; both are products of the same root, tapioca being the pure starch and farinha the starch mixed with woody fibre, the latter ingredient giving it a yellowish colour. It was amusing to see some of the dwarfs, the smallest members of the family, staggering along completely hidden by their load. The baskets, which were on a high table, were completely covered with ants, many hundreds of whom were employed in snipping the dry leaves which served as lining. This produced the rustling sound which had at first disturbed us. My servant told me that they would carry off the whole contents of the two baskets (about two bushels) in the course of the night if they were not driven off; so we tried to exterminate them by killing them with our wooden clogs. It was impossible, however, to prevent fresh hosts coming in as fast as we killed their companions. They returned the next night, and I was then obliged to lay trains of gunpowder along their line, and blow them up. This, repeated many times, at last seemed to intimidate them, for we were free from their visits during the remainder of my residence at the place. What they did with the hard dry grains of mandioca I never was able to ascertain, and cannot even conjecture. The meal contains no gluten, and would therefore be useless as cement. It contains only a small relative portion of starch, and, when mixed with water, it separates and falls away like so much earthy matter. It may serve as food for the subterranean workers, but the young or larvæ of ants are usually fed by juices secreted by the worker nurses.

"Ants, it is scarcely necessary to observe, consist, in each species, of three sets of individuals, or, as some express it, of three sexes,—namely, males, females and workers, the last mentioned being undeveloped females. The perfect sexes are winged on their first attaining the adult state; they alone propagate their kind, flying away previous to the act of reproduction from the nest in which they have been reared. This winged state of the perfect males and females, and the habit of flying abroad before pairing, are very important points in the economy of ants, for they are thus enabled to intercross with members of distant colonies which swarm at the same time, and thereby increase the vigour of the race, a proceeding essential to the prosperity of any species. In many ants, especially those of tropical climates, the workers, again, are of two classes, whose structure and functions are widely different. In some species they are wonderfully unlike each other, and constitute two well-defined forms of workers. In others there is a gradation of individuals between the two extremes. The curious differences in structure and habits between these two classes form an interesting but very difficult study. It is one of the great peculiarities of the Saüba ant to possess *three* classes of workers. My investigations regarding them were far from complete; I will relate, however, what I have observed on the subject.

"When engaged in leaf-cutting, plundering farinha and other operations, two classes of workers are always seen. They are not, it is true, very sharply defined in structure, for individuals of intermediate grades occur. All the work, however, is done by the individuals which have small heads, while those which have enormously large heads (the worker-majors), are observed to be simply walking about. I could never satisfy myself as to the functions of these worker-majors. They are not the soldiers or defenders of the working portion of the community, like the armed class in the Termites or white ants, for they never fight. The species has no sting, and does not display active resistance when interfered with. I once imagined they exercised a sort of superintendence over the others, but this function is entirely unnecessary in a community where all work with a precision and regularity resembling the subordinate parts of a piece of machinery. I came to the conclusion at last that they have no very precisely defined function. They cannot, however, be entirely useless to the community, for the sustenance of an idle class of such bulky individuals would be too heavy a charge for the species to sustain. I think they serve, in some sort, as passive instruments of protection to the real workers. Their enormously large, hard and indestructible heads may be of use in protecting them against the attacks of insectivorous animals. They would be, on this view, a kind of "*pièces de resistance*," serving as a foil against onslaughts made on the main body of workers.

"The third order of workers is the most curious of all. If the top of a small fresh hillock, one in which the thatching process is going on, be taken off, a broad cylindrical shaft is disclosed, at a depth of about two feet from the surface. If this be probed with a stick, which may be done to the extent of three or four feet without touching bottom, a small number of colossal fellows will slowly begin to make their way up the smooth sides of the mine. Their heads are of the same size as the before-mentioned class, but the front is clothed with hairs instead of being polished, and they have in the middle of the forehead a twin ocellus, or simple eye, of quite different structure from the ordinary compound eyes on the sides of the head. This frontal eye is totally wanting in the other workers, and is not known in any other kind of ant.

"The apparition of these strange creatures from the cavernous depths of the mine reminded me, when I first observed them, of the Cyclopes of Homeric fable. They were not very pugnacious, as I feared they would be, and I had no difficulty in securing a few with my fingers. I never saw them under any other circumstances than those here related, and what their special functions may be I cannot divine.

"The whole arrangement of a Formicarium or ant-colony, and all the varied activity of ant life, are directed to one main purpose,—the perpetuation and dissemination of the species. Most of the labour which we see performed by the workers has for its end the sustenance and welfare of the young brood which are helpless grubs. The true females are incapable of attending to the wants of their offspring; and it is on the poor sterile workers who are denied all the other pleasures of maternity that the entire care devolves. What a wonderfully organised community is that of the ant! The workers are also the chief agents in carrying out the different migrations of the colonies, which are of vast importance to the dispersal and consequent prosperity of the species. The successful *début* of the winged males and females depends likewise on the workers. It is amusing to see the activity and excitement which reign in an ant's nest when the exodus of the winged individuals is taking place. The workers clear the roads of exit, and show the most lively interest in their departure, although it is highly improbable that any of them will return to the same colony. The swarming or exodus of the winged males and females of the Saüba ant takes place in January and February, that is at the commencement of the rainy season. They come out in the evening in vast numbers, causing quite a commotion in the streets and lanes. They are of very large size, the female measuring no less than two and a quarter inches in expanse of wing; the male is not much more than half this size. They are so eagerly preyed upon by insectivorous animals that on the morning after their flight not an individual is to be seen, a few impregnated females alone escaping the slaughter to found new colonies."—(P. 23).

Connected with the Saüba ant is a curious animal that resides in its formicarium: this is the Amphisbæna, an apod lizard blunt at both ends, and supposed to travel with equal facility backwards or forwards, a singular property, and one which has earned for it the enviable celebrity of having two heads, one at each extremity. Its skin is divided into small square departments or processes arranged in rings round the body, much as in our English slow worm. Mr. Bates calls these divisions scales, thus following the ordinary nomenclature, but scales they certainly are not, since it is impossible to remove them, and since also the cuticle which covers them is deciduous and shed at the annual ecdysis. The eye is so small as to be scarcely perceptible. These singular reptiles live entirely by day in the subterranean cavities excavated by the Saüba ant. The natives call it the mother of the Saübas, and believe it to be poisonous, although it is perfectly harmless like the rest of its tribe. The ants treat it with great affection, and the natives assert that if the Amphisbæna be removed from the nest the ants will immediately desert it, an assertion that must be received *cum grano salis.* The remains of Saüba ants were found in the stomach of an Amphisbæna opened by Mr. Bates, so that the mother of ants seems to be possessed of the same unnatural propensity as Saturn, and devours her own children.

The notices of monkeys by our traveller are not numerous, neither has he any of those monkey legends to relate which remind one of the illustrious Munchausen. Every thing Mr. Bates has to say possesses the sober and dignified appearance of simple unvarnished truth, and leaves one no opportunity for cavil or cross examination. The only passage I have selected for extract relates to the little kitten-like marmosets, although there are interesting passages about other monkeys, especially the crimson-faced short-tail, with long pendant hair. Its portrait wonderfully resembles a Skye terrier that has submitted to an extraordinary amount of brushing and combing. But now for the marmosets.

Marmoset Monkeys.—"The Midas ursulus is never seen in large flocks; three or four is the greatest number observed together. It seems to be less afraid of the neighbourhood of man than any other monkey. I sometimes saw it in the woods which border the suburban streets, and once I espied two individuals in a thicket behind the English consul's house at Nazareth. Its mode of progression along the main boughs of lofty trees is like that of squirrels; it does not ascend to the slender branches, or take those wonderful flying leaps which the Cebidæ do, whose prehensile tails and flexible hands fit them for such headlong travelling. It confines itself to the larger boughs and trunks of trees, the long nails being of great assistance to the creature, enabling it to cling securely to the bark; and it is often seen passing rapidly round the perpendicular cylindrical trunks. It is a quick, timid, restless little creature, and has a great share of curiosity, for when a person passes by under the trees along which a flock is running they always stop for a few moments to have a stare at the intruder. In Parà Midas ursulus is often seen in a tame state in the houses of the inhabitants. When full-grown it is about nine inches long, independently of the tail, which measures fifteen inches. The fur is thick, and black in colour, with the exception of a reddish brown streak down the middle of the back. When first taken, or when kept tied up, it is very timid and irritable. It will not allow itself to be approached, but keeps retreating backwards when any one attempts to coax it. It is always in a querulous humour, uttering a twittering complaining noise, its dark watchful eyes, expressive of distrust, observant of every movement which takes place near it. When treated kindly, however, as it generally is in the houses of the natives, it becomes very tame and familiar. I once saw one as playful as a kitten, running about the house after the negro children, who fondled it to their heart's content. It acted somewhat differently towards strangers, and seemed not to like them to sit in the hammock which was slung up in the room, leaping up, trying to bite, and otherwise annoying them. It is generally fed on sweet fruits, such as the banana, but it is also fond of insects, especially soft-bodied spiders and grasshoppers, which it will snap up with eagerness when within reach. The expression of countenance in these small monkeys is intelligent and pleasing. This is partly owing to the open facial angle, which is given as one of 60°; but the quick movements of the head, and the way they have of inclining to one side when their curiosity is excited, contribute very much to give them a knowing expression. Anatomists who have dissected species of Midas tell us that the brain is of a very low type, as far as the absence of convolutions goes, the surface being as smooth as that of a squirrel's. I should conclude at once that this character is an unsafe guide in judging on the mental qualities of these animals; in mobility of expression of countenance, intelligence and general manners, these small monkeys resemble the higher apes far more than they do any rodent animal with which I am acquainted." —(P. 96).

The cigana (*Opisthocomus cristatus*) is a bird that has proved very puzzling to ornithologists, from certain peculiarities of structure which they have failed to understand correctly. Those who have really studied the Fauna of the Amazonian districts have detected characters pervading entire tribes which distinguish them readily from corresponding tribes familiar in the Old World. Thus it is with monkeys: the instructed eye cannot fail to distinguish between the Simiadæ of the Old World and the Cebidæ. And thus with the gallinaceous birds: we have learnt to discriminate them with equal facility. Opisthocomus is one of the arboreal poultry of the New World, and has no characters, so far as I know, that raise any doubt of its taking rank amongst them. Nevertheless with the poultry of the Old World it has little in common. But let us hear Mr. Bates on the subject.

Cigana Fowl.—"A much commoner species was the cigana or gipsy (*Opisthocomus cristatus*), a bird belonging to the same order (Gallinacea) as our domestic fowl. It is about the size of a pheasant; the plumage is dark brown, varied with reddish, and the head is adorned with a crest of long feathers. It is a remarkable bird in many respects. The hind toe is not placed high above the level of the other toes, as it is in the fowl order generally, but lies on the same plane with them; the shape of the foot becomes thus suited to the purely arboreal habits of the bird, enabling it to grasp firmly the branches of trees. This is a distinguishing character of all the birds in Equinoctial America which represent the fowl and pheasant tribes of the Old World, and affords another proof of the adaptation of the Fauna to a forest region. The cigana lives in considerable flocks on the lower trees and bushes bordering the lagoons, and feeds on various wild fruits, especially the sour goyava (*Psidium* sp.). The natives say it devours the fruit of arborescent arums (*Caladium arborescens*), which grow in crowded masses around the swampy banks of lagoons. Its voice is a harsh grating hiss; it makes the noise when alarmed, all the individuals sibilating as they fly heavily away from tree to tree, when disturbed by passing canoes. It is polygamous, like other members of the same order. It is never, however, by any chance seen on the ground, and is nowhere domesticated. The flesh has an unpleasant odour of musk, combined with wet hides—a smell called by the Brazilians *catinga*; it is, therefore, uneatable. If it be as unpalatable to carnivorous animals as it is to man, the immunity from persecution which it would thereby enjoy would account for its existing in such great numbers throughout the country."—(P. 119).

It is a treat to receive any information about that little-known beast the ant-eater. Mr. Bates made acquaintance with four species, of which one only is terrestrial, the others arboreal.

Ant-eater.—"The habits of the Myrmecophaga jubata are now pretty well known. It is not uncommon in the drier forests of the Amazons valley, but it is not found, I believe, in the Ygapó or flooded lands. The Brazilians call the species the Tamanduá bandeira, or the banner ant-eater, the term 'banner' being applied in allusion to the curious coloration of the animal, each side of the body having a broad oblique stripe, half gray and half black, which gives it some resemblance to a heraldic banner. It has an excessively long slender muzzle, and a worm-like extensile tongue. Its jaws are destitute of teeth. The claws are much elongated, and its gait is very awkward. It lives on the ground, and feeds on Termites or white ants, the long claws being employed to pull in pieces the solid hillocks made by the insects, and the flexible tongue to lick them up from the crevices. All the other species of this singular genus are arboreal. I met with four species altogether. One was the Myrmecophaga tetradactyla; the two others, more curious and less known, were very small kinds, called Tamanduá-i. Both are similar in size—ten inches in length, exclusive of the tail—and in the number of the claws, having two of unequal length to the anterior feet, and four to the hind feet. One species is clothed with grayish yellow silky hair: this is of rare occurrence. The other has a fur of a dingy brown colour, without silky lustre. One was brought to me alive at Caripí, having been caught by an Indian clinging motionless inside a hollow tree. I kept it in the house about twenty-four hours. It had a moderately long snout curved downwards, and extremely small eyes. It remained nearly all the time without motion, except when irritated, in which case it reared itself on its hind legs from the back of a chair to which it clung, and clawed out with its fore paws like a cat. Its manner of clinging with its claws, and the sluggishness of its motions, gave it a great resemblance to a sloth. It uttered no sound, and remained all night on the spot where I had placed it in the morning. The next day I put it on a tree in the open air, and at night it escaped. These small Tamanduás are nocturnal in their habits, and feed on those species of Termites which construct earthy nests, that look like ugly excrescences on the trunks and branches of trees. The different kinds of ant-eaters are thus adapted to various modes of life, terrestrial and arboreal. Those which live on trees are again either diurnal or nocturnal, for Myrmecophaga tetradactyla is seen moving along the main branches in the day-time."—(P. 178).

But I must hurry on to the humming birds, and then as rapidly as possible close my remarks and extracts, which I feel it extremely difficult to compress into a single number of the 'Zoologist.' In a book like that before me there is such a redundance of quotable passages that I feel overpowered by the very excess. In returning to the delightful subject of humming birds I must not omit to express my obligation to Mr. Wallace for his valuable paper in the April number (Zool. 8486) on the "Humming Bird's Relations." At the same time it would be uncandid in me to abandon the position I had taken up with respect to the near relationship between the hummers and the sun-birds, a relationship supported, as it appears to me, by the only unpublished character Mr. Wallace has adduced, the tubular structure of the tongue of the sun-birds. The growth of the beak in birds, alluded to by Mr. Wallace in the case of the hummers, is a subject very familiar to me: I may mention the curlew as a striking but not singular instance, though it proves literally nothing.

Humming Birds.—"In January the orange trees became covered with blossom,—at least to a greater extent than usual, for they flower more or less in this country all the year round,—and the flowers attracted a great number of humming birds. Every day, in the cooler hours of the morning, and in the evening from four o'clock till six, they were to be seen whirring about the trees by scores. Their motions are unlike those of all other birds. They dart to and fro so swiftly that the eye can scarcely follow them, and when they stop before a flower it is only for a few moments. They poise themselves in an unsteady manner, their wings moving with inconceivable rapidity, probe the flower, and then shoot off to another part of the tree. They do not proceed in that methodical manner in which bees follow, taking the flowers *seriatim*, but skip about from one part of the tree to the other in the most capricious way. Sometimes two males close with each other and fight, mounting upwards in the struggle as insects are often seen to do when similarly engaged, and then separating hastily and darting back to their work. Now and then they stop to rest, perching on leafless twigs, when they may be sometimes seen probing, from the place where they sit, the flowers within their reach. The brilliant colours with which they are adorned cannot be seen whilst they are fluttering about, nor can the different species be distinguished, unless they have a deal of white hue in their plumage, such as Heliothrix auritus, which is wholly white underneath, although of a glittering green colour above, and the white-tailed Florisuga mellivora. There is not a great variety of humming birds in the Amazons region, the number of species being far smaller in these uniform forest plains than in the diversified valleys of the Andes, under the same parallels of latitude. The family is divisible into two groups contrasted in form and habits; one containing species which live entirely in the shade of the forests, and the other comprising those which prefer open sunny places. The forest species (Phaethorninæ) are seldom seen at flowers, flowers being, in the shady places where they abide, of rare occurrence; but they search for insects on leaves, threading the bushes and passing above and beneath each leaf with wonderful rapidity. The other group (Trochilinæ) are not quite confined to cleared places, as they come into the forest wherever a tree is in blossom, and descend into sunny openings where flowers are to be found. But it is only where the woods are less dense than usual that this is the case: in the lofty forest and twilight shades of the lowlands and islands they are scarcely ever seen. I searched well at Caripí, expecting to find the Lophornis Gouldii, which I was told had been obtained in the locality. This is one of the most beautiful of all humming birds, having round its neck a frill of long white feathers tipped with golden green. I was not, however, fortunate enough to meet with it. Several times I shot by mistake a humming-bird hawk-moth instead of a bird. This moth (*Macroglossa Titan*) is somewhat smaller than humming birds generally are, but its manner of flight and the way it poises itself before a flower whilst probing it with its proboscis are precisely like the same actions of humming birds. It was only after many days experience that I learnt to distinguish one from the other when on the wing. This resemblance has attracted the notice of the natives, all of whom, even educated whites, firmly believe that one is transmutable into the other. They have observed the metamorphosis of caterpillars into butterflies, and think it not at all more wonderful that a moth should change into a humming bird. The resemblance between this hawk-moth and a humming bird is certainly very curious, and strikes one even when both are examined in the hand. Holding them sideways, the shape of the head and position of the eyes in the moth are seen to be nearly the same as in the bird, the extended proboscis representing the long beak. At the tip of the moth's body there is a brush of long hair scales resembling feathers, which, being expanded, looks very much like a bird's tail. But of course all these points of resemblance are merely superficial. The negroes and the Indians tried to convince me that the two were of the same species. "Look at their feathers," they said, "their eyes are the same, and so are their tails." This belief is so deeply rooted that it is useless to reason with them on the subject. The Macroglossa moths are found in most countries, and have everywhere the same habits; one well-known species is found in England. Mr. Gould relates that he once had a stormy altercation with an English gentleman, who affirmed that humming birds were found in England, for he had seen one flying in Devonshire, meaning thereby the moth Macroglossa stellatarum. The analogy between the two creatures has been brought about probably by the similarity of their habits, there being no indication of the one having been adapted in outward appearance with reference to the other. It has been observed that humming birds are unlike other birds in their mental qualities, resembling in this respect insects rather than warm-blooded vertebrate animals. The want of expression in their eyes, the small degree of versatility in their actions, the quickness and precision of their movements, are all so many points of resemblance between them and insects. In walking along the alleys of the forest a Phaethornis frequently crosses one's path, often stopping suddenly and remaining poised in mid-air, a few feet distant from the face of the intruder. The Phaethorninæ are certainly more numerous in individuals in the Amazons region than the Trochilinæ. They build their nests, which are made of fine vegetable fibres and lichens, densely woven together, and thickly lined with silk cotton from the fruit of the Samaüma tree (*Eriodendron samaüma*), on the inner sides of the tips of palm fronds. They are long and purse-shaped. The young when first hatched have very much shorter bills than their parents. The only species of Trochilinæ which I found at Caripí were the little brassy green Polytmus viridissimus, the sapphire and emerald (*Thalurania furcata*) and the large falcate-winged Campylopterus obscurus."—(P. 179).

At page 40 of the second volume is a very graphic account of the mode in which a Brazilian wasp of the genus Pelopæus builds its nest; there is nothing perhaps very novel in the narrative, but it is certainly very interesting. The nest was made of clay, and the little creature flew straight to the pit with a loud hum, settled at once, and, losing not a moment in any unnecessary survey, proceeded at once to knead the clay into little round pellets, one of which it carried off at each journey to its pouch-like nest. This was two inches in length, and generally attached longitudinally to a twig. One of these little masons began to build on the handle of a chest in our traveller's canoe when stationary in the river. Every pellet was brought to the new edifice with a song of triumph, which subsided into a cheerful hum as soon as the creature alighted and began to work. The little ball of moist clay was laid on the edge of the cell,—the nest contains but one,—and then spread out around the circular rim by means of the lower lip guided by the mandibles. The insect placed itself astride over the rim to work, and on finishing each addition to the building walked round it and patted the sides with its feet before flying away for another pellet. These nests generally occupy one week in building, but in this instance the canoe moved away before the architect had finished, and the wasp declined to follow. These nests are stocked with small spiders of the genus Gastracantha, in that semi-animate state we so often observe in the nests of our British fossorial Hymenoptera.

A species of Melipona, a genus of bees which seems to represent the hive-bee of Europe, has the same habit of collecting clay. The rapidity and precision of their movements while thus engaged is truly wonderful. They first scrape the clay with their mandibles; the small particles thus obtained are then cleared from the mandibles by the anterior paws and passed to the middle pair of feet, which in their turn transfer the clay to the dilated posterior tibiæ, just where our honey-bee stores its collected pollen; the middle feet pat the growing pellets on the hind legs, thus keeping them in shape. As soon as a bee is well loaded off she flies to the nest where the clay is used, not in the construction of cells, but to wall up the exterior of the nest or the rent in the bark of a tree in which the nest is constructed, a small hole only being left, just sufficient for the entry and exit of the bees.

The sloth is another most tempting subject, and one perhaps rather perilous to introduce; but I feel it would be a bit of inexcusable cowardice to suppress the information Mr. Bates has given us. We all know that the very name of this strange creature was given to express its character; we all know that the belief obtained for very many years that the name was a description and conveyed a truthful idea; and it is also known that the sloth in the Zoological Society's Gardens well merits the character for slothfulness assigned to its kindred. But there is another side to the question, or, as it is rather coarsely expressed, another end of the stick, and one of our most illustrious travellers has seized the other end of the stick, and has given his testimony as an eyewitness that the sloth belies his name, and runs along the under side of a bough, back downwards, with considerable speed and a reasonable amount of activity. Now Mr. Waterton certainly saw the sloth in a state of Nature, and Buffon and Cuvier certainly did not, and so Natural-History readers in general were inclined to side with Mr. Waterton, and to believe that the sloth had first obtained and long retained his place in our system in virtue of a false character. At this point of the controversy another eyewitness enters the box and gives his evidence as follows :—

"The inhabitants of the Amazons region, both Indians and descendants of the Portuguese, hold to the common opinion, and consider the sloth the type of laziness. It is very common for one native to call another, in reproaching him for idleness, 'bicho do Embauba' (beast of the Cecropia tree), the leaves of the Cecropia being the food of the sloth."—(Vol. II. p. 56).

Now it is quite impossible that the Indians, and very improbable that the descendants of the Portuguese, should have adopted a fable from Europe concerning an animal with which they are so familiar as with the sloth. But what says Mr. Bates of his own observation. He watched the creature with truth-seeking eyes, not to establish a theory, but fully alive to the conflict of opinions.

"It is a strange sight to watch the uncouth creature, fit production of these silent shades, lazily moving from branch to branch. Every movement betrays not indolence exactly, but extreme caution. He never loses his hold of one branch without first securing himself to the next, and when he does not immediately find a bough to grasp with the rigid hooks into which his claws are so curiously transformed he raises his body, supported on his hind legs, and claws around in search of a fresh foot-hold."—(Vol. II. p. 57).

I leave this without comment. On one occasion our traveller saw a sloth swimming a river three hundred yards wide. No doubt can be entertained as to what the animal was, for the boatmen caught, killed, roasted, and ate him.

But now a word on toads. It may be supposed that wherever nocturnal insects abound there are toads to devour them on the ground, and goatsuckers in the air: both these tribes abound in the valley of the Amazons. As soon as night comes on swarms of goatsuckers make their appearance, and on every track through the forest toads are squatted waiting in stolid patience for the movement of their insect prey. "A great number of toads," says Mr. Bates, "are seen on the bare sandy pathways soon after sunset. One of them was quite a Colossus, seven inches in length and three in height. This big fellow would never move out of our way until we were close to him. If we jerked him out of the path with a stick he would slowly recover himself, and then turn round and have a good impudent stare. I have counted as many as thirty of these monsters within half a mile."—(Vol. II. p. 59).

I lay down these volumes with the utmost reluctance, and without any present intention of again returning to them; but I can truly say that it has never been my fortune to meet with such a mine of Natural-History wealth. A kindly spirit, an entire truthfulness, a power of exact observation, and a plain and unornamented yet easy and eloquent style, are the characteristics of every page; and I cannot resist the temptation this passing notice affords me of offering a tribute of thanks to Mr. Darwin, without whose strenuous recommendation we might possibly have lost for ever an invaluable contribution to the Natural History of the Great Father of Waters.

Edward Newman.

Occurrence of the Bank Vole, or Campagnole (Arvicola pratensis), *in Derbyshire.*—On the 13th of February, when staying with my relative, Sir T. Harpur Crewe, at Calke Abbey, near Ashby-de-la-Zouch, I was fortunate enough, with the assistance of two cousins, to capture six fine specimens of this very distinct but little-known species. We found them all in a large heap of rotten straw, stalks of Angelica sylvestris, twitch, &c., which had been lying for nearly two years undisturbed in a wet plantation. I am not aware that this species has previously been noticed as occurring in Derbyshire; but this is probably owing to its not having been looked for.—*H. Harpur Crewe; The Rectory, Drayton-Beauchamp, Tring, April* 14, 1863.

On the Breeding of the Nutcracker.—About six months ago I expressed a hope of being able before long to give the Society some more certain information with respect to the breeding of the nutcracker (*Nucifraga caryocatactes*). In that hope I have not been altogether disappointed. The nest and young bird now exhibited, the latter still showing traces of its original downy clothing, have been received by me, within the last few days, from my excellent friend Herr Pastor P. W. Theobald, of Copenhagen, to whom I think the Society will join with me in hearty congratulations on his success in obtaining these decisive facts in regard to the nidification of this mysterious bird, and whose zeal in the quest of zoological discovery fully deserves, in my opinion, all the praise that can be accorded to it. Believing, however, that the Pastor will himself publish fuller details of this interesting capture, I will only briefly recount the information with which he has supplied me. It appears that previously to the summer of 1860 a forester in the island of Bornholm had satisfied himself that the nutcracker was in the habit of breeding there annually. He had seen it every month in the year, from May to November inclusive; and this intelligence being communicated to Herr Theobald, that gentleman made an expedition to the island, but without finding the special object of his search—a nest of the bird. This present spring, however, the Pastor, accompanied by two of his friends, HH. Erichsen and Fischer, both keen oologists, visited Bornholm a second time; and one of their achievements I have now the pleasure of making known to you. Writing from that island, on the 30th of May last, Herr Theobald says:—"Returning to the result of our ornithological expedition, I can tell you that, after many days' inquiries, we succeeded in finding two nests of Nucifraga caryocatactes, the young birds flying near them. As we presumed, we came too late for getting the eggs; but I think we have advanced a good deal, and after this discovery we dare be almost sure of receiving them next year. Our gentle and clever host, the forester Rosen, who now knows the time and manner of nidification of this bird, may be considered a guarantee for our hopes. We have thought it might be of interest to you to possess an undoubtedly genuine nest of N. caryocatactes, and also a young bird in the first plumage; we therefore send you one nest and one skin. Both the nests are of the same size and construction. They were in fir trees (*Pinus rubra*), not very private, but rather easy to find. It is likely that the young birds had left the nest perhaps eight days. None of them moved, except with difficulty, among the branches; and one of them fell on the ground. The old birds cried, but only sometimes, with an anxious voice that was not unlike a magpie's, and then all was silent again. In the neighbourhood of the nest, where the birds had been previously observed, we found on the rocky ground a good number of freshly-cracked hazel-nuts; and as no nut trees grow there, the birds must fetch them from a distance of an English mile at least. We are inclined to think that they collect them in autumn, and secure them in a private spot; and perhaps it is on this account also that the bird, whose economy is very hidden, is seldom to be seen in the breeding time. As I have already mentioned, the nest is not of the most difficult class to find. It is not built on the top of the tree, but close to the stem, about twenty-five or thirty feet high. The bird is an early breeder, but can scarcely have eggs before the beginning of April. Now you have the nest wherein the young birds were lately hatched, and a young bird in its first plumage. Next year we hope to send you very well-authenticated eggs." I have only to conclude by mentioning that the nest, as will be seen on examination, is of large size, some five or six inches in thickness, with an outside diameter of about a foot, and a shallow depression of six inches across; but the cup was probably a good deal deeper before its brim was subjected to the weight of the young birds. It is composed outwardly of sticks and twigs, among which I recognize those of the larch, spruce and birch. These latter show the period at which it must have been built, as the buds, though enlarged, had not burst. It has a thick lining of grass, which appears to have been plucked while growing. The very small bits of moss and lichen do not seem to have been intentionally added, but to have adhered to the other materials. The down with which the nestling has been covered, and of which traces may be observed on a few of the back-feathers, is of a dark brownish gray, as is usual among the Corvidæ. The first plumage much resembles that of the adult, being, however, duller in colour, and with the white tear-like spots less conspicuous; but the quill-feathers of the wings and tail are not so entirely destitute of metallic reflections as some authors lead one to imagine. Whether the nutcracker builds the whole structure for itself, or only furnishes the forsaken nest of some other animal, I do not know. This and other particulars we shall probably soon learn from Pastor Theobald himself; and I need scarcely say I look forward with the greatest interest to the clearing up of our doubts as to what its eggs are really like.—*Alfred Newton, in 'Proceedings of Zoological Society,' June* 24, 1862. [*Communicated by the Author*].

On the supposed Gular Pouch of the Male Bustard. — Now, thinking it quite possible, from my knowledge of the various opinions I have here arrayed, that the belief in this mysterious organ might have been prematurely abandoned, I was very anxious to investigate the matter for myself. I thought it highly desirable that an examination of a really old cock bird should be made, and *that* at the season of the year when a structure of the sort might be supposed to be most fully developed. As our native race of bustards has been extinct since 1838, or thereabouts, it was not easy to obtain such a specimen as I wished.* At length, through the kindness of a correspondent, Mr. Henry Smurthwaite, on the 12th of March, 1858, I received a magnificent old male Otis tarda, which had been killed near Leipzig a few days before, and had been forwarded to me with all possible speed. It weighed 23½ ℔s., and arrived in beautiful condition. With the greatest anxiety I immediately looked under the tongue—no hole was visible; I took a probe—no opening appeared. Mistrusting my own powers of manipulation and dissection, I hurried off with it to London, and secured the assistance of Mr. A. D. Bartlett, than whom there can scarcely be a more practical or more careful observer. We again searched for the opening under the tongue, and we came, I confess reluctantly, to the undoubted conclusion that in this specimen it did not exist. Mr. Bartlett then began to skin the neck—not in front, lest we should cut into the pouch, but from the axilla along the side to the corner of the mouth, laying bare the skin on either side: nothing like a pouch could be seen. Subsequently we separated the windpipe and gullet, and cut them off from the head. Then with a blowpipe it was easy to inflate the body by the œsophagus: by the trachea we failed to do so, as the air escaped through a broken wing-bone; but by blowing down the former we could swell out the whole body and neck wonderfully. After that we cleared the skin away from the entire neck, and presently from the body. The neck was entirely clothed with cellular tissues in a most remarkable manner; they were very delicate, and so close to the skin that even when we grazed the roots of the feathers we occasionally cut them. On the blowpipe being inserted into one of the apertures thus made, a small bubble was immediately raised, which increased on greater power being applied, so as to form a considerable bag, perhaps three inches long. This peculiarity we found in every part of the neck; but it was plain, after one or two trials, that none of these bags existed of themselves, but were the result of the membranes being forcibly ruptured by the pressure of the air. Once or twice, on inflating the tissues, a sort of hour-glass form, such as is mentioned by Naumann, was apparent, but generally the bags were wider at the top than at the bottom. The examination took us between three and four hours, but at last the membranes became so dry that we had some difficulty in inflating a small cluster of bubbles to preserve as a specimen, which Mr. Bartlett still keeps. I can most honestly assert that if I had any prepossession beyond the wish of arriving at the truth, it was in favour of the existence of the pouch; and I am sure Mr. Bartlett took all possible pains to find it. I had told him of much that had been written and of much that I had heard on the subject; among other things a communication I have not before mentioned here, made to me by my friend Mr. John Scales, to the effect that many years ago, when residing in Norfolk, he obtained a very large male bustard, now one of the glories of the Museum at Norwich, from which he "dissected out the pouch." Mr. Bartlett, as my readers are no doubt aware, now holds the situation of Superintendent at the Gardens of the Zoological Society, and, knowing that he has since had other opportunities of observation, I lately applied to him to furnish me with the results. His answer, containing, as I think, a most valuable suggestion, is as follows:—"The interest I have felt with reference to the existence or otherwise of the pouch in the throat of the great bustard has naturally led me to examine with great care all the birds of that species that have come within my reach. Notwithstanding my want of success, and, I must add, my disappointment, I am of opinion that it would be unwise and unfair to deny that something differing from what I have found does occasionally exist. The fine large adult male obtained by you in March, 1858, and in which we failed to find any opening under the tongue, or any natural pouch, on examination exhibited a structure capable of being easily converted into an appearance of that which is so carefully described by older authors. Since that opportunity I have dissected two other males; one on February 14, 1861. Dr. Albert Günther, Dr. Sclater and Mr. E. W. H. Holdsworth were present on this occasion. The bird was a large male, not an old one, but probably in the second year, the whiskers being somewhat developed. The most careful examination, made by myself and the above-named gentlemen, failed to discover any opening under the tongue. Being perfectly satisfied on this point, an incision was made in the skin, beginning at the corner of the mouth; and, as in the specimen which you and I formerly examined, we found the same abundance of delicate membranes spread over the fore part of the neck and throat. By inserting the end of a blowpipe any number of cells could be inflated, the walls of which, on the application of a little force, would give way, and thus form one or more large cavities or bags. During the examination a discussion took place with reference to the means whereby these membranes were distended in life,—whether by muscular dilatation or by inflation; and I must admit that this part of the subject has since appeared to me to require more consideration than I at first thought it deserved. On February 21st, 1861, another fine male great bustard, of about the same age as the last, was examined by me, and with precisely the same result as before. In conclusion, the only suggestion I can offer as a means of explaining the existence of a pouch in the fore part of the neck is that, in the males, some of the membranes surrounding the throat may occasionally be ruptured through the excessive distention that takes place during the violent paroxysms to which the birds are subject on the approach of the breeding-season. I have seen them with throats enlarged to an extraordinary extent, the pinions lowered to the ground, while the points of the primaries are crossed over their backs. In this distorted attitude they rush on and attack each other, affording one reason to imagine that these delicate membranes may at such a time give way, and produce the abnormal condition so often alluded to as being found in old males. As a further probability of this being the true explanation, I would call attention to the great diversity in size and shape of the so-called pouch, as given by different observers. The fluid contained therein would be also fully accounted for, if my hypothesis be correct." Dr. Günther besides has furnished me with his observations on the dissection of one of these specimens, at which he, as Mr. Bartlett states, was present. Dr. Günther says:—"It was an adult male, as we saw by the plumage and by the testicles. There was no trace of a foramen below the tongue, or of any peculiar sac communicating with the cavity of the mouth. The œsophagus dilated into a large crop. The cellular tissue between the œsophagus and the trachea, and in the region above the furcula, did not show any development greatly differing from what we find in other birds." Dr. Günther, I believe, does not entirely assent to the probability of Mr. Bartlett's ingenious suggestion being the true explanation of the case, but says that "It is possible that an accessory organ, peculiar to the male sex, like this sac, may be found in some males, probably in the larger portion, and in others not. From this single example which I have seen, I should for the present draw the conclusion only that the sac is not constant in all specimens." It has long been known in this country that at the death of John Hunter, in 1793, his manuscripts passed into the hands of Sir Everard Home, by whom they were burnt, after he had adopted from them many ideas, which he announced as his own, but fortunately not before copies of a considerable number of the papers had been made by Mr. Clift. At the death of this gentleman these copies came into the possession of Professor Owen, who in the course of last year published them. In this work ('Essays and Observations on Natural History,' ii. pp. 300, 301) occurs the following passage:—"The cock bustard has a very thick neck, and long hairy feathers under his throat. On the fore part of his neck, reaching lower down than the middle, is a large bag, as large as the thick part of one's arm: it terminates in a blind pouch below, but has an opening into it at the upper end from the mouth. This aperture will admit three or four fingers; it is under the tongue, and the frænum linguæ seems to enter it; and it seems to have a sphincter. What the use of this is I don't know. In a young cock bustard, about a year and a half old, this pouch did not exist; therefore it becomes a question whether or not this is a matter of age."—*Alfred Newton, in the 'Ibis,' April*, 1862. [*Communicated by the Author.*]

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* Most, if not all, of the stray examples which have of late years occurred in England appear to have been birds of the preceding summer, and, with two exceptions only, have been females. The very fine young male obtained near Hungerford, January 3, 1856, was preserved at Mr. Leadbeater's establishment ('Proceedings of Zoological Society,' 1856, p. 1). Mr. J. Wolley, who was then in London, at my request, questioned the man who skinned it, but no special search for a gular pouch was made. The breast-bone of this bird, with some of the membranes still adhering to the anterior part, is now lying before me.

Reported Discovery of the Moa.—Explorers in New Zealand report that they have found traces of the gigantic bird called by the natives the "moa," which induce them to think it is not extinct. The bones found in the earlier days of the colony, though not very recent, were not fossil. Some, indeed, which I have seen had cartilage about them which Papin's digester would have been capable of converting into soup. The bones found by the last explorers were much more recent, and were on the surface; and it is said that they found foot-marks which they believe to have been made by some large bird very recently. I see no reason to believe that the moa does not exist, and I think the probability is that it does. The Middle Island was never very thickly peopled, and it is nearly thirty years since it was almost depopulated by Te Ranperaha's tribe. The natives were confined to the eastern side of the island, and never penetrated to the mountains on the east coast. Their superstitions militated against it. They believed that a race of wild men inhabited the mountains, which were also infested by the dreaded taniwa, a great lizard which ate men. They also had a tradition that the moa still lived in the ranges. Since the Europeans have inhabited New Zealand no lizards have been seen larger than about eighteen inches, and certainly no wild men have been met with by the explorers; so that the superstition of the natives only proves their ignorance. The bones discovered during the last twenty years prove that the moa lived at no very distant day. Why should he be extinct? We know of no enemy likely to exterminate him; and if the untrodden wastes of the Middle Island furnished him with food at a period not distant enough to fossilize his bones, we know of no change which has altered the condition of the islands on that score up to the present day. There are birds which could not so easily preserve their existence, and which have not as yet become extinct. The kiwi-kiwi (apteryx) for instance, and the kaka-po (night parrot), which is also wingless. Both these birds are small, and have numerous enemies, especially native dogs, which would be powerless against the moa. It is, therefore, by no means impossible—I even think it probable—that Professor Owen may yet be gratified by a recent specimen of this gigantic bird.—*Correspondent of 'Times' Newspaper.*

Reported Discovery of the Moa.—In your impression of this morning I see, in your Australian intelligence, that a party of explorers, travelling to the west coast of New Zealand, have found traces of the above-named bird, which lead them to believe that the bird is not, as is commonly supposed, extinct. Your correspondent also adds that he is not aware of any enemy capable of having exterminated it. Now, in New Zealand, especially in that dense bush which covers the greater part of the west coast of the Middle Island, bush fires (supposed to be occasioned by the friction of the boughs of trees, which grow very close to each other) are constantly occurring, and the commonly received opinion in New Zealand is that by these fires the moa has been burnt out. In fact, to a certain extent the old Maori legends bear this out. They say that before the depopulation of the Middle Island by Te Ranperaha and Co., the whole of the vast extent of country known as the Canterbury Plains was bush, and that they burnt it all on account of the misbehaviour of the moa, who, they say, used to carry away their children and devour them. Be this as it may, certain it is that pieces of timber have been found a very small distance from the surface on the Plains, which bore unmistakeable evidence of having flourished at no very distant date. I may add that all the remains of moas which I have seen in New Zealand bore traces of having been subjected to the action of fire.—*Hulton J. Webber; Tunbridge Wells, April* 13.—*'Times' Newspaper.*

Reported Discovery of the Moa. — As anything connected with the rumoured discovery of this long-supposed extinct bird is interesting, we make no apology for reproducing from another source our previous account of its alleged appearance. The gentleman to whom we are indebted for our former narration had it from the lips of one of the discoverers. We have now an account from another gentleman, who also received it from one of the men; and it is noticeable, as indicative of their truth, how entirely the two statements tally. Mr. Rees, of the Wakatipu, our present informant, has taken one of the men in his employment, and has frequently conversed with him on the subject. He has tested his veracity in every way he could conceive, and is thoroughly convinced that the man is stating only the truth. His narration is as follows:—He and his mate started for the Arrow Township in search of a new gold discovery, which was rumoured as being worked "on the quiet." One evening they encamped about twenty-five miles north-west of the Arrow. It was just sundown, and they were sitting by their camp fire, when one of them exclaimed, "Look at that rise above us, Jim; there's some one there." They looked, and beheld an enormous bird approaching to the edge of a hill immediately above them, at a distance of between 300 and 400 yards from where they were sitting. The bird seemed to perceive the camp fire, and squatted down, keeping its head turned on one side, fixed on the fire. It continued so for several minutes, and at last got up and walked off. Although it stepped slowly it was soon out of sight, the length of its stride being so great. Its height appeared about seven feet, without reckoning the head and neck. Its head was very long and flat, and it carried its head bent forward, instead of carried back as is usual with birds of the ostrich species. The next morning the men, having provided themselves with tent poles, proceeded to the spot, where they at once saw the track of the bird and followed it a long distance, but without success. The track-mark showed three claws, a distance of twelve inches intervening between the points of each. Back about a foot was the mark of a pad, and behind that, again, that of a spur. As we have said, the man from whom Mr. Rees had these particulars is now in his employment. As soon as he has finished the work he is about, he is going in search of the bird, Mr. Rees having promised him £500 for it, dead or alive. Mr. Rees has entire faith in the truth of the account; the man has been many years in the province, and is not likely to have imagined or invented the story.—'*Otago Daily Times*,' *February* 16.

The Moa.—Reports coming from different quarters, together with the information received at different times from the natives, point to the existence of a large bird in the solitary parts of the interior of New Zealand, which is doubtless the long-coveted moa. The bird was never very numerous, and, according to native authority, very shy and retiring. The existence of this much-talked-of bird will not be long a question of doubt, for every corner of the locality where it is said to be still in existence will soon be ransacked by the gold-diggers of Otago and the district, who in their thirst for gold are making daily encroachments on its solitary domains. Such of your readers as have friends in New Zealand would confer a favour on us stay-at-home boys if they would request their friends to keep them furnished with any new facts that come to light, which they may easily do, as the question of the existence of the moa is causing considerable stir in the colony, and any facts, however trivial, are eagerly seized upon by the papers.—*John Ranson*, *York*.

[Mr. Ranson cites two of the Reports I have here reprinted. I would also direct the reader's attention to passages already published in the 'Zoologist.' See especially Zool. 7847. I am quite inclined to adopt the theory that the moa still exists. —*Edward Newman*.]

Descriptions of Twenty-four New Species of Spiders lately discovered in Dorsetshire and Hampshire; together with a List of rare, and some other hitherto unrecorded, British Species.

By the Rev. O. PICKARD-CAMBRIDGE, M.A.

Family SALTICIDÆ.

SALTICUS CITUS.

Female, immature. Length 1-fourth of an inch. Length of cephalothorax 5-thirty-seconds. Relative length of legs, 4, 1, 3, 2.

Cephalothorax large, square and massive, sloping abruptly at the hinder part, and slightly compressed behind each posterior eye, glossy and sparingly clothed with hairs. Colour black-brown, paler and with a reddish tinge on the upper side, especially in the ocular region, which is circled with a band of yellowish hairs, commencing on either side below the outer eyes of the front row.

Eyes eight, forming three sides of a square; the front side curved. The two centre eyes of the front row more than double the size of the end ones of the same row. The centre eyes of the side rows are very small, and rather nearer to the hinder than to the front eyes of these rows.

Abdomen small, of a slender oviform shape, and of a deep black colour. The upper side has a transverse band at the front extremity, formed of pure glistening white hairs; this band is of a somewhat semicircular or rather crescent shape. Towards the spinners are four intensely white spots, two on each side of the medial line, those nearest the spinners being the smallest and nearest together. Along the centre of the hinder half of the abdomen are two reddish dentated lines formed by red hairs, and making a pattern of an oblong form with dentated sides. Under side paler than the upper, and has four pale white longitudinal lines converging towards the spinners. Plates of the spiracles pale white.

Palpi of moderate length. Colour black. The radial, cubital and humeral joints have their upper sides fringed with intensely white longish hairs.

Legs longish and stout (the first pair much the stoutest, fourth pair longest, first pair next in length, and second pair shortest), clothed with hairs and black spines. Colour blackish, with a greenish tinge; the tarsal and metatarsal joints being pale murky yellowish.

Falces short, stout, and inclined towards the maxillæ. Their colour is a rich dark brown.

Maxillæ and labium of a pale murky brown, palest at the extremities.

I have described this distinctly marked and very active species from an immature female, kindly given me alive by Mr. Samuel Stevens, who captured it in August, 1862, among orchideous plants in the conservatory of Mr. G. Read, at Burnham, near Bridgewater, Somerset. Mr. Stevens says it was of frequent occurrence there, and was cherished by Mr. Read on account of its services in destroying insects injurious to his plants. He conjectured that it might have been imported from South America among some of his plants. This may have been so; still, as it appears to be of an undescribed species, and has nothing particularly foreign about its appearance, I have described it as a British spider, leaving it to future observations to determine whether it is an imported species or not.

SALTICUS COCCO-CILIATUS.

Male, adult. Length 1-tenth of an inch. Length of cephalothorax 1-eighteenth. Relative length of legs, 4, 3, 1, 2.

Cephalothorax oblong and massive, sloping abruptly behind. Colour dull yellow-brown, with a reddish hue, obscurely mottled with fine blackish spots. The margins are clouded with blackish. The square bounded by the eyes jet-black, and continued in a tapering form to the hinder margin; it is thinly clothed with red and blackish hairs. The four eyes of the front row are surrounded with a sort of iris, or cilia of bright scarlet sessile hairs; this iris is broadest on the lower margins of the eyes, and gives the spider a very remarkable appearance.

Eyes eight, forming three sides of a square; the front side slightly curved; the sides straight. The two central eyes of the front row are very much larger than that on either side, and the space between them is rather wider than that between each and the outer eye on its side. The intermediate eyes of the side rows are much the smallest, and they are equidistant from the other two eyes of the row, and in the same straight line.

Legs moderately long, very stout and strong; clothed, but not very thickly, with black and yellowish hairs, and black spines. The two foremost pairs are jet-black, except the tarsi, which are greenish yellow. The two hind pairs are also jet-black, but have the tibial, tarsal and metatarsal joints annulated with reddish yellow. In some specimens all the legs have the two joints nearest the sternum of a greenish yellow, with blackish blotches.

Maxillæ strong, broad at the extremity, where they are rounded on the inner margins; slightly inclined to the labium. Their colour is the same as that of the cephalothorax, but paler at the top; that of the labium (which is short but broad at the base, and rather pointed at the top) is somewhat darker than that of the maxillæ.

Sternum of a blackish brown colour.

Palpi short, stout. Colour greenish yellow-brown, mottled with black. Radial joint shorter and smaller than the cubital, and, with the digital joint (which is large and shining black), has its upper side furnished with long shining white hairs: these form a very marked and striking contrast with the black cephalothorax and scarlet irides. Palpal organs prominent and highly developed, but not very complicated in structure; they have a strong black spine, curved in a circular form towards their extremity; this spine springs from their inner side, and is closely attached to their surface: their colour is brownish yellow, tinged with greenish.

Abdomen oviform, slightly shorter than the cephalothorax, over which it does not project much. Its colour is black-brown, thickly clothed with black hairs on the upper side, where it is marked with two strongly dentated longitudinal lines throughout its whole length; and from the outer angular points of these lines three or four curved ones run obliquely to the inner side: all these lines are formed by longish coppery red hairs thinly disposed, and are sometimes not easy to make out, especially as in capturing the spider they are liable to be displaced and rubbed off.

The female is rather larger than the male, and has the cephalothorax not so broad and massive as in that sex. Her palpi are yellow, fringed on the upper side with white hairs mixed with a few long black ones, and she wants the scarlet hairs round the anterior eyes. The cephalothorax is black, covered with black and coppery hairs. Her abdomen is in general more distinctly marked, though in pattern like that of the male; and the under side is brown, clothed with palish hairs. The plates of the spiracles are yellowish, and her legs are also yellowish, annulated with red-brown.

This very pretty and distinct Salticus was discovered by myself on Bloxworth Heath, in the young state, in May, 1861; and in June, 1862, I met with adults of both sexes. It is an exceedingly active spider, and appears to prey, among other things, on the small black ants which are not rare where this spider occurs. One of those that I captured had in its falces a young ant, for which it must have entered the ant's burrows. Another had just made a prey of one of the springtails (*Poduræ*).

Family THOMISIDÆ.

PHILODROMUS DELETUS.

Female, immature. Length 3-sixteenths of an inch. Length of cephalothorax 1-tenth. Relative length of legs, 2, 1, 4, 3.

Cephalothorax large, circular, compressed at the eyes; clothed sparingly with short yellowish hairs. Colour dull sandy yellow, slightly darker on the sides. A dark yellowish brown stripe occupies the medial line of the hinder half; on each side of this stripe is a band of the same colour, scalloped out on either margin. The intervals of the scallops on the outer margin are paler than the rest of the cephalothorax, and form a short series of pale patches or blotches.

Eyes black, small, of nearly uniform size, and forming a semicircle; the two centre ones of the front row slightly the largest, and nearer together than the two corresponding ones of the hinder row.

Legs long, of the same colour as the cephalothorax, furnished with hairs and a few spines of different sizes, and scantily and irregularly marked with dark yellow-brown blotches and spots. The under sides of the tarsal and metatarsal joints are thickly clothed with strong papillæform hairs, which spread outwards on each side, and form quite a tuft at the articulation of these two joints. The metatarsal joints of the fourth pair have but a few of these hairs.

Abdomen broader at the middle than at the extremities, rather darker coloured than the cephalothorax, clothed with hairs. A large fusiform band of dark yellow-brown, edged with pale yellowish, scalloped on each outer margin, and, ending in a fine point, runs down the centre to about a third of its length from the spinners; the scalloping of the margins of this band leaves two angular points on each side of it. The sides of the abdomen towards the spinners have four or five rows of more or less distinctly marked pale yellowish white spots, varying in size; and now and then two or more spots are confluent: these rows run obliquely backwards from the upper to the under side. The under side, sternum and maxillæ are clothed with hairs, and of the same colour as the cephalothorax and legs. The falces and labium are rather darker.

Three females of this species were captured by myself, in June, 1862, running in bright sunshine on the sand-hills at Bournemouth, in Hampshire; but I was unable to discover the male. In the character of the markings this spider bears some resemblance to Philodromus elegans (Blackwall's 'British and Irish Spiders,' p. 94), but may be easily distinguished by its paler and more "washed-out" appearance, by the markings being all far less vivid, and by its shorter and more robust form; the bands on the cephalothorax differ from those of P. elegans in being *narrower*, scalloped on the margins, and so with *several angular points on each side;* the central band also of the abdomen has, in P. elegans, only *one* angular point on each side. This spider, which is also allied to Philodromus fallax (Sundevall), is, I think, quite distinct from that species; and though far less striking looking than P. elegans, is yet a very distinctly marked one. When at rest on the bare sand, with its legs extended, it was quite invisible, and only caught the eye by its very rapid movements, composed of sundry short runs.

PHILODROMUS HIRSUTUS.

Female, adult. Length 3-twentieths of an inch. Length of cephalothorax 1-twentieth. Relative length of legs, 4, 2, 3, 1.

Cephalothorax of a dull yellowish drab-colour, sparingly clothed with short brownish and yellowish hairs, amongst which are some long black bristly nearly erect ones; those on the forehead are very long and directed forwards. It has three longitudinal bands, of a blackish brown colour—one, down the centre, commences at the two centre eyes of the hinder row (which it includes); it has the margins scalloped, and tapers to a point at the hinder part of the cephalothorax: the other two bands commence at the outer eye on either side, and increase in breadth towards the hinder part, where they end abruptly.

Eyes black. The outer ones of the front row (which is exactly on the upper edge of the forehead) are rather the largest of the eight, and considerably larger than the two middle ones of the same row; these four eyes are equidistant from each other. The hinder row is much the longer, and rather less curved than the front row; the eyes composing it are equidistant from each other, the two central ones being slightly smaller than the outer ones.

Legs moderate in length, rather robust, of the same colour as the cephalothorax, and similarly furnished with hairs and fine spines. The tarsal and metatarsal joints have two rows of papillæform hairs on their under side; but this character is not nearly so strongly marked as in P. deletus (above described).

Palpi like the legs in colour, and similarly clothed with hairs and spines.

Maxillæ and falces similar in colour and clothing to the palpi, but the bristly hairs on the maxillæ are not of such a marked character.

Sternum and labium yellowish drab, freckled with dark brown, and clothed with brown hairs.

Abdomen oval, rather abruptly truncated at the upper end, and not very sharply pointed at the spinners. Colour slightly paler than that of the cephalothorax. Clothed with short yellowish brown hairs, and, like the cephalothorax, legs, &c., the upper part and sides are furnished with long erect blackish bristly ones. On the upper side are five dark brown lines or bands, formed by spots and blotches more or less near together; one of these bands is of a diamond shape much elongated; it runs down the centre, ending about half-way towards the spinners, and is continued towards them by one or two isolated spots of the same colour; on either side of the hinder part of this band is another, these two coming together in a point just above the spinners; and on each upper margin of the forward end of the abdomen is another, running (at first continuously and then with irregular dots) round the whole margin towards the spinners; sundry small spots of the same colour as these bands may be seen dispersed between them, and from these spots spring the most conspicuous of the bristly hairs. On each side of the abdomen, towards the under part, is another broad longitudinal band of the same colour, reaching nearly, but not quite, to the spinners. Three longitudinal bands of rather a lighter brown (and of which the centre one is much the widest) occupy the under side, and converge towards the spinners, where they are connected by a transverse line of the same hue, composed of short hairs; the central band is interrupted at the site of the sexual aperture, and in the part of it next the sternum there are two pale spots. The sexual organs are of a horse-shoe shape, slightly prominent and edged with red-brown.

This spider, which is closely allied to the genus Thomisus, was captured by myself on a gate-post at Bloxworth, Dorset, in June, 1862. It is unlike any other spider of this family that I have met with, and, from being almost wholly clothed with long black bristly hairs, presents a very striking appearance.

Family DRASSIDÆ.

CLUBIONA RECLUSA.

Male, adult. Length 1-fifth of an inch. Length of cephalothorax 1-tenth. Relative length of legs, 4, 1, 3, 2.

Cephalothorax slopes gradually into a slightly curved outline from the centre to the eyes, where it is slightly compressed on the sides. It has a slight longitudinal indentation in the medial line of the hinder part. Colour yellowish, tinged with red. The margins are red, and sundry veinings of a reddish brown run from the eyes and lateral margins to a point in the centre. It is clothed with short yellowish hairs, which considerably obscure the veinings, except when seen in spirits of wine.

Eyes eight, in two curved rows, the curves directed backwards. The foremost row is nearly straight, and is just above the frontal margin; the eyes of this row are about equidistant from each other; the centre ones are the darkest coloured, and slightly the largest of the eight. The centre ones of the hinder row are further from each other than each is from the end one on its side; the eyes of this row are about equal in size, and, with the end ones of the front row, are edged with deep bistre-brown, and in two out of three specimens that have come under my notice the eyes themselves were tinged with the same colour: in one specimen the brown colour almost approached to black. The lateral pairs of eyes are not contiguous, being separated rather further from each other in an oblique direction than the one forming the end eye of the front row is from the next to it in that row.

Legs long. Colour pale yellow. Clothed sparingly with hairs and a few longish black spines. The fourth pair are the longest, and the third pair the shortest, and but little shorter than the second pair.

Maxillæ same colour as the legs. Longish, straight, enlarged at the tops, where they are rounded on the outer sides. The inner sides are obliquely hollowed, and thickly clothed with short black hairs.

Labium tinged with reddish brown, broader at the top than at the base. The top is slightly hollowed or notched.

Falces straight and cylindrical, but neither remarkably long nor stout. Rather darker coloured than the cephalothorax, and cut away on the inner sides near their extremity in an obliquely transverse line.

Sternum long-oval, pointed near the abdomen. Colour yellowish, sometimes suffused with blackish brown.

Palpi short and stout. Cubital joint slightly clavate, and the margin underneath protuberant; it is longer than the radial joint, which is enlarged at its extremity, and has on the outer side three strong projections or apophyses, of a deep black-brown colour tinged with red—one, towards the front, is broad, with the extremity hollowed out or notched; another, less strong than the former, projects just behind it, at right angles to the joint, and has its extremity sharply bent forwards; the third is flattish, and has the appearance of a dagger-blade slightly folded on one side; it is the longest of the three, and has a sharp point; it issues from beneath the other two, and applies closely to the digital joint, rather underneath on its outer side, extending to nearly half its length. The radial joint has also two slight conical protuberances at its extremity—one on its upper side, the other on the inner side. The digital joint is long-oval and hairy, its colour yellowish, slightly suffused with brown. Palpal organs simple and not very prominent; from their extremity on the inner side there projects a short, stout, slightly curved, dark black-brown spine; and from their extremity towards the inner side is a longish, narrow, semitransparent projection, in contact with which is the prominent sharp point of a slender reddish spine; this spine issues from underneath the extremity of the palpal organs, but its true origin and situation I could not satisfactorily ascertain; but apparently its origin is underneath the outer extremity of the outer lobe.

Abdomen long-oval, of a deep brownish red colour thickly freckled with yellowish, and thickly clothed with yellowish hairs. At the front extremity there are a few stiff, strong, dark hairs, curving upwards and slightly backwards. When in spirits of wine there may be traced a pale yellowish medial line on the forward half of the upper side, followed by some transverse angular ones towards the spinners, which are long, prominent, and of a dull yellow colour; the upper ones suffused with brownish red. Plates of the spiracles yellow, and two yellow lines, running from the outer side of the spiracles, converge to the spinners.

The female is rather larger than the male, and much darker coloured (which is usually the case with females of this genus after the deposition of their eggs); the falces are also shorter and stouter, and their profile, instead of being nearly straight, is much curved outwards, owing to the base of the falces being far more prominent in front than in the male.

The male of this species bears some resemblance to the male of Clubiona holosericea in the form of the palpi, but its general appearance is more like that of C. amarantha; and for this latter species it was mistaken by Mr. Meade, who has for several years had it among specimens of C. amarantha, but cannot remember where it was captured. I have, during the summer of 1862, met with it at Bloxworth, Dorset, in woods. The females were abundant, sewn up, with their eggs, in leaves of low-growing plants, principally in leaves of young plants of Angelica sylvestris. The season for the males was evidently passed: the only one of this sex I met with was enclosed in a leaf, like the females, but, unlike them, there was a place of exit left in the folded leaf. In some of the leaves the young were hatched, and the old females seemed to be exhausted and nearly dead: their nests were to all appearance hermetically sealed, for I could find no entrance in any direction, every corner being closely sewn up with white silky web. The eggs were enclosed in a flattish lenticular cocoon of the same material.

In the veinings on the cephalothorax this species resembles Clubiona brevipes, but the male palpi differ totally in the form of the radial joint; and by the form of this joint it may also be distinguished at once from both C. amarantha and C. holosericea. From this latter species it may be known also by its yellower colour, and coarser hairs on the abdomen, the appearance of C. holosericea being gray, soft and silky; the radial joint of the palpi of C. holosericea also wants the stout notched projection at its extremity in front.

Family CINIFLONIDÆ.

CINIFLO PUTA.

Female, immature. Length 1-fifteenth of an inch. Length of cephalothorax 1-thirty-first. Relative length of legs, 4, 1, 2, 3.

Cephalothorax broadly truncated in front, and slightly compressed on the sides forwards. It is rather convex behind the eyes, towards which it slopes gradually. Hinder slope abrupt, and with a broadish, shallow, longitudinal indentation. Colour yellow-brown; margins and ocular region rather darker. The hinder part has some long bristly hairs, slightly directed forwards.

Eyes in two curved rows; the curves directed backwards; the hind row the most strongly curved. The eyes of that row are about equidistant from each other; the end ones are the largest. The two centre ones of the front row are dark-coloured, and rather closer together than each is to the end one on its side. The eyes of the lateral pairs near together, but not contiguous; the front eye of these pairs the largest of the eight. The front row is situated close above the frontal margin.

Legs stout, moderate in length, clothed with hairs and spines, and with a calamistrum on the upper side of the metatarsi of the hinder pair. Colour yellowish, tinged with brown.

Falces short, very powerful, slightly compressed at their base on the sides, prominent in front. Hairy, and similar in colour to the cephalothorax.

Maxillæ strong, hairy, slightly inclined to the labium, which is longer than broad, and squarish at the top. These parts are similar in colour to the falces, the labium being rather darker.

Sternum broad, convex, heart-shaped and hairy. Colour yellowish brown, mottled with darker brown, and the margin bounded by a dark brown line.

Palpi moderately long, hairy, and like the legs in colour.

Abdomen large, very convex above, abruptly sloping at the spinners, and much projecting over the base of the cephalothorax. It is clothed with hairs, of which there are a good many strong dark ones just underneath the upper end, directed upwards and forwards. Colour yellow-brown, thickly mottled and suffused with darker brown. Plates of the spiracles paler. On the upper side towards the cephalothorax are several longish, obscure, pale yellow-brown spots, forming somewhat of an oblong figure; these are followed towards the spinners by some shortish transverse angular lines of the same colour (formed by short pale yellowish hairs), the angles directed forwards.

The specimen above described was not quite adult, but is distinct from any species I have seen, and is, I believe, a species hitherto undescribed. It may easily be distinguished by its general plain yellow-brown colour, and the obscurity of the pattern on the abdomen. It was captured by myself at Bloxworth, in 1861.

Family AGELENIDÆ.

AGELENA BOOPIS.

Female, immature. Length 1-fifteenth of an inch. Length of cephalothorax 1-thirty-second.

Cephalothorax compressed on the sides forwards, and slightly prominent at the eyes. Colour dull yellow, suffused with sooty brown. The space occupied by the eyes is black. A sharply angulated yellow patch, with the angle directed backwards, commences close behind each of the two central eyes of the hinder row; these patches are separated from each other by a fine blackish longitudinal line. There is a slight rise in the cephalothorax, followed by a transverse dip, behind which, on each side, is an oblique yellow line.

Eyes in two rows, on the, almost vertical, front of the cephalothorax, and very unequal in size. The front or lower row is nearly straight; the upper one is the longest, and very much curved, the curve directed backwards. The eyes of the lower row are equidistant from each other, the end ones being rather smaller than the centre ones, and the smallest of the eight. The central eyes of the upper row are very disproportionately large, protruding and wide apart, their outer rims extending nearly to the entire length of the lower row. The outer eyes of the upper row are about the same size as the centre eyes of the lower row; and the space between the centre ones of the upper row is greater than that between each of them and the end one on its side.

Legs short, moderately stout. Colour dull straw-yellow, with a faint appearance of being annulated with sooty brown. Sparingly clothed with hairs and a few long black spines.

Falces moderate in length and strength, convex and protuberant in front near their base. Hairy, and like the cephalothorax in colour.

Maxillæ same colour as the falces, slightly inclined towards the labium, which is rather broader at the base than at the top, where it is flat, rounded at the corners, and, with the sternum, of the same colour as the maxillæ.

Abdomen oval, convex above, and projecting greatly over the base of the cephalothorax. Colour pale straw-yellow, slightly suffused with sooty points on the sides and upper side forwards. No trace was visible of any pattern, but this may have been owing to its very immature state. Spinners very unequal in length; upper one of each of the side pairs much the longest.

The specimen from which I have described this species was evidently too young to be in any way depended upon for size, colour or markings; but I have notwithstanding been induced to describe it, from the strong specific character furnished by the eyes alone; and this character would not be affected by age. The great relative disproportion in the size of the eyes, and their situation on the perpendicular facial space, will at once distinguish it from all its congeners. It was met with by myself at Bloxworth, Dorset, in 1861.

CÆLOTES MÆRENS.

Female, immature. Length 1-fifteenth of an inch. Length of cephalothorax 1-thirtieth.

Cephalothorax broad and squarish in front, rather sloping from the hinder part of the ocular region to the forehead, and very abruptly sloping behind the abdomen. On this hind slope is a broad shallow longitudinal indentation. Colour pale yellowish brown, with a green tinge, suffused with blackish at the eyes. About the centre of the cephalothorax is an irregular spade-shaped patch, of a dull sooty colour, from which several lines run from the front to the eyes, and from the sides obliquely forwards. Margins black, and from them several broadish stripes of dull sooty brown converge towards the hinder part of the central patch, and narrow to a point as they approach it.

Eyes in two rows, just above the insertion of the falces; the front row shortest, and nearly straight; the hinder one curved slightly from it. The outer eyes of the front row are very slightly the largest of the eight, the outer ones of the hind row next, and the centre ones of the front row the smallest. The distance between the two centre ones of the hind row is slightly greater than that between each and the end one on its side. The central eyes of the front row are close together, but do not touch; and each touches the end eye nearest to it.

Legs strong, moderate in length, clothed with hairs and a few spines. Rather paler in colour than the cephalothorax. The tibial, tarsal and metatarsal joints (except at the articulations) suffused with blackish.

Falces short, strong, and of a pale dull greenish colour.

Palpi similar to the legs in colour. Radial and digital joints long, and slightly suffused with blackish.

Maxillæ moderately long, strong and convex, enlarged at the top, where they are rounded on the *inner* and obliquely truncated on the *outer* sides. They are strongly inclined to the labium, and are of a dull greenish hue.

Labium broad at the base, from which it narrows into a triangular shape, with the point blunted. Colour blackish brown.

Sternum: line of junction with the labium, hollowed out. It is heart-shaped and very convex, hairy, and of a greenish colour, thickly mottled and suffused with dull blackish.

Abdomen short-oval, thickly clothed with hairs, among which are many long palish ones. It projects considerably over the base of the cephalothorax. Colour black, freckled with minute pale points. Upper side with a whitish spot on each side of the medial line, at about half its length towards the spinners; to these succeed, on each side, an oblong, slightly oblique, pale whitish patch, followed by two others rather more oblique, forming chevrons interrupted at the centre; these are followed by one or two short, but rather curved transverse lines of the same colour.

Spinners dull greenish in colour. Inferior pair much stouter and longer than the rest. Plates of the spiracles greenish, suffused, especially towards the upper ends, with dull black.

I met with the specimen above described on low plants in a wood at Bloxworth, in May, 1862. It is evidently a very young specimen. Its characters are, however, sufficiently marked to enable me to describe it as distinct from any known species; and it appears to belong to the genus Cælotes, of which only one species has been before described.

Family THERIDIIDÆ.

THERIDION SPIRAFER.

Male, adult. Length 1-ninth of an inch. Length of cephalothorax 1-nineteenth. Relative length of legs, 1, 2, 4, 3.

Cephalothorax but slightly raised in front. A deep oblique indentation behind each lateral pair of eyes, and one in the medial line of the hinder part. Very sparingly furnished with hairs. Colour dull yellow, of an amber tint. Margins dull blackish brown. A broad central band of red-brown includes the eyes, and narrows gradually to the hind margin.

Eyes on tubercles. The two centre ones form a square, if anything a trifle wider in front than behind. The eyes of the side pairs almost touch each other, and are placed slightly obliquely.

Legs of the same colour as the cephalothorax, and hairy. The first pair is much the longest; they are blotched with dark reddish brown at the joints, and the upper halves of the tibial joints of the males are suffused with red-brown.

Abdomen oval, very convex above, thickly clothed with hairs, and projecting considerably over the base of the cephalothorax. Its pattern on the upper side consists of three longitudinal bands; the centre one narrows towards the spinners, and is of a dark black-brown, strongly dentated on the edges, which are bounded by a clear broad line; this line dilates over the fore part of the abdomen, and is often tinged with green and red: the central band may be described as consisting of a series of blunt-ended, black-brown, diamond-shaped patches, of which that nearest the cephalothorax is far the largest, and has its hinder part much shorter than the fore part. The band on each side of the central one is of a yellow-brown colour, with a warm reddish tinge, obscurely mottled with whitish yellow and brown points: these bands are irregularly dentated on their lower sides, and also edged with a bright yellow line. The sides of the abdomen are yellowish brown, with numerous zigzag perpendicular lines of deep black-brown, in some specimens having merely the appearance of being mottled with that colour. A broad longitudinal band of dark brown, edged with bright yellow, occupies the under side.

Maxillæ, labium and falces like the cephalothorax in colour; the latter mottled at their base and outer sides with blackish, suffused with brown. Sternum the same, broadly edged with black-brown and thinly freckled with black points.

Palpi short, hairy, and similar in colour to the legs. Cubital joint shorter than the radial, and furnished with several long bristly hairs. The radial joint is produced, on its outer side forwards, into a strong abruptly-pointed projection, overlapping the side of the digital joint, which is roundish-oval, prolonged at the end into a kind of snout. The convex sides of the digital joints are turned underneath and slightly towards each other, thus turning the palpal organs upwards and slightly outwards. These organs are not complicated, nor very highly developed: they consist chiefly of a circular lobe, of a dull reddish yellow colour, palest in the centre. This lobe is arched over by a fringe of long, bristly, black hairs, springing from the outer edge of the produced part of the radial joint, which has a deep red-brown horny margin. This fringe is met by another of less conspicuous hairs, issuing from the opposite and black margin of the digital joint. The outer edge of the palpal organs is encircled by the coils of two very long dark red-brown filiform spines, one of which issues from the inner side of the circular lobe, and the other from near the inner side of the radial joint: these spines have the appearance, in some specimens, of being but *one* of a larger size, but with a little care they may be separated, and seen to consist of two smaller ones: the length of these spines, when uncoiled, is upwards of 1-fourth of an inch. The female is rather larger than the male, but resembles it in colour and markings.

An adult male and immature females of this species were captured on furze-bushes at Hursley, near Winchester, in May, 1860, but were overlooked among specimens of T. pulchellum, to which it is allied, until I met with it again in tolerable abundance at Bloxworth, in June, 1862. It differs very remarkably from T. pulchellum in the form of the palpi, and structure of the palpal organs (especially the long, fine, coiled spines connected with them), although resembling it somewhat in the markings of the cephalothorax and abdomen; it is, though, less vivid in its colours than that species. It spins an irregular web among the shoots and blossoms of the common furze.

THERIDION CONGENER.

Female, adult. Length 1-ninth of an inch. Length of cephalothorax 1-twentieth. Relative length of legs, 1, 4, 2, 3.

Cephalothorax small; ocular region elevated, prominent, and compressed on the sides forwards. Colour deep shining black-brown. The space between the eyes and frontal margin (*i. e.*, the insertion of the falces), is of considerable extent, and slopes much forwards.

Eyes in two curved rows, forming almost an oval at the extremity of the prominence. The centre ones of the hinder row are closer to each other than each is to the end one on its side. Those of the side pairs are contiguous, and obliquely seated on a strong tubercle. The two centre eyes of the front row are the widest apart and the largest of the eight: these last two are black; the rest are pearly white.

Legs short, stout, sparingly clothed with hairs and a few fine spines. Colour pale yellow, blotched and annulated with deep shaded black and yellow-brown, giving much the appearance of tortoise-shell.

Maxillæ rather dilated at the base, longish and almost meeting over the labium, which is pointed: these parts are of a dark brown colour.

Falces short, strong, and of a deep blackish brown colour.

Sternum heart-shaped, broad, very convex, and of a deeper colour than the cephalothorax.

Palpi of moderate length, coloured and annulated like the legs.

Abdomen large, very like some of the Epëiridæ in its form, *i. e.*, much broader in front than at the spinners. Upper side yellowish, thickly mottled and suffused with yellow-brown, and with numerous black dots and points, forming five or six obscurely defined, yellowish, transverse, angulated stripes, the angles directed forwards; the stripes running quite to the lower margins, where they melt into the clearer yellow of the sides. These stripes contain the principal black spots and points, which are largest, and appear as if run together, at the angle of each stripe. The sides towards the front are black, edged broadly underneath with yellow; and the part projecting over the cephalothorax is also black, as is the whole of the under side and the part surrounding the spinners. About one-third of the distance between the spinners and the plates of the spiracles are two transverse, oblong, rather curved, yellow spots, one on each side of the medial line. Sexual organs well-developed, and of a deep red-brown colour.

This spider, which is remarkable from the form of the abdomen and its short stout legs, is evidently allied to, though very distinct from, T. denticulatum. The specimen from which the above description has been made was captured by myself, in July, 1858, at Lyndhurst, Hants. I have left it undescribed hitherto, in hopes of finding the male.

Family LINYPHIIDÆ.

LINYPHIA ALBICINCTA.

Male, immature. Length 1-eighth of an inch. Length of cephalothorax 1-sixteenth. Relative length of legs, 1, 4, 2, 3.

Cephalothorax narrow in proportion to its length, but broad and square at the eyes. It is very glossy and shining. Colour dull yellow, slightly suffused with brown, especially towards the margins and hinder part. Margins indistinct brownish red.

Eyes dark-coloured, and on very distinct black spots. The centre ones of the hinder row are considerably the largest of the eight. The side pairs are seated obliquely on a tubercle, and are about equal in size, and the smallest of the eight.

Legs moderate in length and strength, pale dull yellow in colour, and furnished very sparingly with hairs and a few longish black spines.

Maxillæ stout, convex and straight, slightly rounded at their extremity on the outer side, obliquely truncated and excavated on their inner corners, where their colour is a deep red-brown, the rest being a little darker coloured than the cephalothorax.

Labium short, broad at the base, narrower at the top, where it is rounded off. Colour dark red-brown.

Falces very strong, convex and straight, slightly cut away on the inner sides at their extremity, where they are furnished with strong dark red-brown teeth. Colour similar to that of the cephalothorax.

Sternum heart-shaped, and of a deep red-brown colour.

Palpi short, like the legs in colour. Radial joint longer and stronger than the cubital. Digital joint very large; but as these parts required the last moult to complete their development, the structure of the palpal organs could not be discerned.

Abdomen oblong-oval, very convex above throughout, and glossy. Upper side dull yellow-brown, tinged with red. Under side dark red-brown. These portions are separated from each other by a narrow horizontal band of white, which runs completely round the abdomen, though commonly interrupted just above the spinners. On the upper side two longitudinal rows of red-brown blotches or spots are visible in most specimens, and between these rows many specimens have a narrow tapering longitudinal band of the same colour: these spots vary much in appearance and size, and in some specimens they run together, and form a kind of broad, dentated, red-brown band, occupying nearly the whole of the upper side of the abdomen: in most specimens the blotches nearest the spinners run together into an irregular patch. The white band, too, presents considerable variety in different specimens, in some being only a white line, in others much broader, but interrupted. Some specimens have the sides and spaces between the rows of red-brown spots more or less suffused or mottled with white; in some the red-brown spots are more or less nearly obsolete. The female resembles the male, but is rather larger.

I captured specimens of this species at Hursley, near Winchester, in August, 1861, and have since found it numerous at Bloxworth, Dorset. It spins an irregular web among the leaves and stems of low-growing plants in woods. I have not yet met with it quite adult, most of those met with having another moult to undergo before becoming so.

This species may readily be distinguished from any other known *native* species by *its reddish yellow hue*, as well as by the white band which separates the upper and under sides of the abdomen. It is evidently allied to, but I think quite distinct from, the Linyphia cincta of Walckenäer. In the general character of its markings it bears some resemblance to females of L. fuliginea, but its colours differ totally.

LINYPHIA SETOSA.

Male, adult. Length 1-tenth of an inch. Length of cephalothorax 1-twentieth. Relative length of legs, 1, 2, 4, 3.

Cephalothorax broad, raised and prominent at the eyes, and with a longitudinal indentation on the hinder part. Colour brownish yellow, rather clouded with brown towards the margin. Space occupied by the eyes black, and from and behind this space issues a thinnish tuft of strong bristly hairs, curving forwards and downwards.

Eyes set about the prominence on the fore part of the cephalothorax, on geminated black spots, in two rows curved slightly away from each other. The eyes of the side pairs are very near together, but do not touch each other. The centre ones of the hinder row are wide apart, and those of the front row are almost contiguous. The end ones of the front row are the largest of the eight, the other six being nearly uniform in size.

Legs long, rather slender, of a brownish yellow colour, slightly tinged with greenish, furnished with longitudinal rows of brown hairs, and a few fine spines of a darker colour. An erect spine issues from each of the genual joints. Their relative length is 1, 2, 4, 3, the third pair being considerably the shortest.

Palpi short and slender. The cubital and radial joints about equal in length; the latter is much the stronger, protuberant at its extremity, and has a tuft of strongish hairs on its upper side, but no marked projections. Cubital joint furnished with a long bristly hair, issuing forwards from the upper side of its lower extremity. Digital joint hairy; it has a prominent lobe on the outer side, and a strong, dark red-brown, corneous projection, issuing from its base near the radial joint on the outer side, and curving across it to the inner side. Underneath this projection the base of the digital joint has a curved conical prominence, pointed in the same direction. The palpal organs are highly developed, prominent and complicated, consisting of lobes and irregular processes, of a red-brown colour; two prominent, black, curved spines, parallel but not close together, enveloped in membrane, issue from underneath the outer side towards their extremity, and curve under towards the inner side.

Falces moderately long and strong; divergent at their extremities.

Maxillæ long, strong and straight, and, with the labium, which is short and semicircular, of a yellowish colour clouded with brown.

Sternum of a black-brown colour, clothed with longish hairs.

Abdomen oval, not very convex on the upper side, thinly clothed with hairs. Upper side straw-yellow. A large irregular patch of black-brown occupies the forward half, and is succeeded by several transverse angulated bars of the same colour (the angles directed forwards), but of different widths. Sides, part just above the spinners, and under side black-brown, the latter part the darkest coloured.

An adult female differed from the male in having the cephalothorax dark brown, and in the patch and bars on the abdomen being of greater extent and all run together, leaving an interrupted band of yellow on either side, and two or three obscure spots of the same colour below each band on the lower margin of the abdomen. The specimens above described were captured by myself on Bloxworth Heath, in May, 1862. It is a striking-looking species, and the horn-like projection at the base of the digital joint, together with the two curved spines enveloped in membrane connected with the extremity of the palpal organs, will serve to distinguish it at once from others of the genus Linyphia.

LINYPHIA PULLATA.

Male, adult. Length 1-tenth of an inch. Length of cephalothorax 1-twenty-first. Relative length of legs, 1, 4, 2, 3.

Cephalothorax rather shorter than the abdomen. A strong oblique indentation on the sides just behind the ocular region, and a broad shallow one towards the hinder part. Colour brownish yellow, suffused on the sides and margins with sooty black; some specimens have but little of this suffusion; others are entirely of a sooty black on the cephalothorax.

Eyes in two rows, on front of cephalothorax. The front row is the shortest and nearly straight, and the hinder row is curved away from it. They are nearly equal in size; the two centre ones of the hinder row slightly the largest, and those of the front row slightly the smallest of the eight: these last are close together, but do not touch each other. The eyes of the hinder row are about equidistant from each other.

Legs long and rather slender. The first, fourth and second pairs do not differ much in length. They are of a yellow colour, thinly clothed with hairs and a few longish fine spines on the upper sides of the femoral and tibial joints.

Palpi short, like the legs in colour. Radial joint larger and stronger than the cubital: these joints are furnished with several longish, curved, black, bristly hairs, directed forwards. Digital joint large and slightly protuberant on the outer side; it is darker in colour than the rest of the palpus, and hairy. Palpal organs well-developed and prominent, but not very complicated. One strong, straight, corneous process, of a reddish colour, runs along the inner side, and ends near their extremity in a blunt point. Two other processes, edged with black, occupy the centre, and end near the extremity in curved or hooked points; and there is a shorter curved process on the outer side of the palpal organs near their base.

Falces long and moderately strong, rather sharply and abruptly divergent towards their extremity. Similar in colour to the cephalothorax.

Maxillæ long, strong, and curved towards the labium, which is short and rather pointed at the top.

Sternum broad, convex and hairy. These parts are of a yellowish colour, more or less suffused with sooty black.

Abdomen not so convex above as many others of this genus. Underneath and on the sides it is of a blackish brown colour. Upper part towards the cephalothorax pale dull yellowish brown, divided by a more or less distinct blackish longitudinal streak, from which on either side issue two or more oblique lines, each of which sometimes ends in a largish spot: these lines form two chevrons, with the vertices directed forwards: to these succeeds a longitudinal dentated band of the same colour, narrowing to a point just above the spinners, and bordered with black; the black border joining in with the black-brown of the sides and under part. This pattern is more or less distinctly visible in all the specimens I have seen: in some the whole abdomen is suffused with sooty black, and thus the pattern is almost obliterated. The female differs from the male only in having the abdomen somewhat more convex above. The sexual organs are not very prominent, but they have connected with them a longish nearly straight process (or ovipositor?), of a yellowish colour tipped with red-brown: this process is directed backwards, and applies closely to the surface of the abdomen.

Adults of both sexes of this spider were captured by myself on iron railings at Bloxworth, in May, 1862. It is very closely allied to L. pulla, which it much resembles in general colour and appearance; it is, however, smaller, and differs in the pattern on the abdomen, and specially in the structure of the palpal organs; these want the spine curved in a circular form at their extremity, enclosing another spine within its coil, which is characteristic of L. pulla: these organs also differ in other points of their structure. The female also differs from that of L. pulla by the ovipositor (?) being longer and stronger.

NERIENE INNOTABILIS.

Male, adult. Length 1-twelfth of an inch. Length of cephalothorax 1-twenty-sixth. Relative length of legs, 4, 1, 2, 3.

Cephalothorax shortish-oval, much compressed at the eyes, where it is slightly prominent. The hinder part has a shallow indentation in the medial line. Colour dull yellowish brown, with a green tinge. Margins bounded by a sooty brown line, and some obscure lines of the same colour converge to a point in the centre.

Eyes on black spots, in two rows of equal length, curved away from each other, the hinder row most curved. Nearly equal in size, except the two centre ones of the front row, which are much the smallest, and are nearly contiguous. The two centre ones of the hinder row are further from each other than each is from the end one on its own side. The eyes of the side pairs are close together, but not contiguous.

Legs moderately long and stout, rather paler and clearer coloured than the cephalothorax, almost equal in length, the third pair rather the shortest, and the fourth pair slightly the longest. They are furnished with brownish hairs, and a few short slender spines.

Maxillæ short, strong, dilated at the base, and much inclined towards the labium, which is broad, and semicircular at the top. These parts, together with the falces, which are of moderate length and not very powerful, are of the same colour as the legs.

Sternum moderately convex, hairy and of a sooty brown colour.

Abdomen largish, oval, moderately convex above, and projects over the base of the cephalothorax. It is of a dull greenish yellow-brown, suffused and mottled with sooty brown.

Palpi short, moderately stout. Radial joint rather longer and stouter than the cubital: the former is rather produced in front on the inner side, ending in an obtuse point. Cubital joint has several black spiny hairs in front on the upper side. Digital joint large, obtusely conical on the upper side, the point of the cone rather directed outwards; it has also an angular enlargement near the base on the outer side. Palpal organs highly developed, prominent and complicated, of a pale colour, with reddish edges and marks on their lobes and processes. At their extremity are several fine, short, curved and other black spines.

An adult male of this spider was captured by myself among the rugged bark of Scotch firs, at Hursley, near Winchester, in May, 1862. A close and critical examination of the palpi of this species will be necessary to distinguish it from others nearly allied, and equally obscure-looking in their general characters.

NERIENE CONIGERA.

Male, adult. Length 1-fifteenth of an inch. Length of cephalothorax 1-thirty-third. Relative length of legs, 4, 1, 2, 3.

Cephalothorax short, rather pointed at the eyes, where it is but slightly compressed on the sides. It has a very slight longitudinal indentation in the medial line of the hinder part. A very slight transverse dip behind the ocular region. Colour pale brown, with a greenish tinge. Margins bounded by a sooty brown line.

Eyes in two rows slightly curved from each other, nearly equal in size; the centre ones of the hinder row rather the largest, and those of the front row rather the smallest of the eight. The centre ones of the hinder row are rather further apart than each is from the end one on either side. The eyes of the front row are about equidistant from each other; those of the side pairs close together, but do not touch.

Legs moderate, and not greatly different, in length. The fourth pair are very slightly longer than the first, and the third pair shortest. Colour pale whitish, tinged with greenish yellow. They are sparingly clothed with longitudinal rows of blackish hairs, and a very few short, fine, nearly erect, black spines.

Falces longish, but not very powerful, slightly paler in colour than the cephalothorax.

Maxillæ strong, dilated at the base, slightly inclined towards the labium, and obliquely truncated on the outer side. Similar in colour to the falces, but paler at the top, and clothed on the inner margins with sooty black hairs.

Labium very short, semicircular, slightly dilated at the top. Colour greenish, mottled with sooty specks.

Sternum broad and very convex, square at the labium, to which it is similar in colour.

Abdomen pale murky greenish yellow, thickly mottled and obscured with light sooty brown; thinly clothed with fine blackish hairs; very convex above, and of a short-oval form.

Palpi moderately stout, not very long, similar in colour to the legs. Humeral joint slightly curved inwards. Cubital joint very short, and with a slight sharpish prominence in front, furnished with two or three short black bristly hairs. Radial joint about equal in length to the cubital, but rather stronger, and with a slight projection on the inner side over the base of the digital joint, which is rather darker colour than the rest and of a largish size, furnished with blackish hairs: this joint has, on the upper side near its base, a large conical prominence, the point of which is slightly directed backwards and outwards: this prominence is convex on the inner and slightly concave on the outer side. Palpal organs prominent, highly developed and complicated: connected with them, at the base underneath, is a dark-coloured, flattish, reap-hook shaped, corneous process. These organs project far outside and beyond the margins of the digital joint, and consist of lobes and corneous processes, with one or two short black spines at their extremity: they are of a pale colour, edged with reddish.

Two adult males of this spider were captured by myself on furze-bushes at Bloxworth, in April, 1862. The most striking and leading characteristic of the species seems to be the conical prominence on the base of the digital joint of the palpi.

NERIENE SUBTILIS.

Male, adult. Length 1-twelfth of an inch. Length of cephalothorax 1-twenty-sixth. Relative length of legs, 4, 1—2, 3. In the general form and structure of the palpi this species bears considerable resemblance to Nëriene conigera (last described), but it differs in being larger, of a more elongated form, and of a totally different colour.

Cephalothorax yellowish brown tinged with red, and suffused with brown near the eyes.

Legs brightish red-brown, paler at the articulations of the joints. Fourth pair perceptibly longer than the first, which scarcely differ in length from the second pair.

Sternum similar to the legs in colour.

Abdomen long-oval, of a deep brown-black above, and reddish brown underneath, with a pale oblique line forwards, just above the plates of the spiracles, and a longitudinal pale line on each side, meeting at the spinners, which are of a pale drab colour.

Palpi short, not very strong. The cubital joint has a strong black bristly hair on its upper side. Radial joint produced into a sharp projection in front on the inner side. Digital joints large; their convex sides turned towards each other. Near the middle of the digital joint on the upper side there is a strong conical prominence, flattened on the outer side; but this prominence is not proportionally so large, nor is its apex directed backwards, as in N. conigera; neither is its outer side so concave, and it does not spring from so near the base of the joint. Palpal organs very prominent and complicated; their colour is yellowish red, edged and marked with red-brown.

I captured an adult male of this species among heath-stems and roots, at Bloxworth, in June, 1862.

NERIENE ANOMALA.

Female, adult. Length 1-eleventh of an inch. Length of cephalothorax 1-twenty-fourth. Relative length of legs, 4, 1—2, 3.

Cephalothorax small, oval, compressed forwards. Colour dull yellow-brown, with some sooty lines springing from the margins (which are similarly bounded), and meeting in a point near the centre. A little way behind the eyes there is a figure of a triangle with the angles cut off, and divided down the centre, formed by similar sooty brown lines. A short transverse indentation occupies each side of the medial line, and there is a longitudinal one in the medial line of the hinder part.

Eyes in two rows of equal curvature, the curves directed from each other; the hinder row is slightly the longest. The eyes of both rows are nearly equal in size; the centre ones of the front row slightly the smallest, and near together, but not touching each other. The centre ones of the hinder row are rather further apart from each other than each is from the end one on its side. The eyes of each of the side pairs are placed very slightly obliquely, and are contiguous.

Legs bright yellow-brown, tinged with reddish, pale at the articulations of the joints. Fourth pair decidedly longer than the first, which are little if any longer than the second, and the third pair slightly shortest. They are moderately long and stout, and are furnished with rows of darkish hairs, and a few fine short spines.

Falces short, strong. The frontal margin projects rather over their base. Colour murky yellow-brown.

Maxillæ large, stout, inclined towards the labium, much dilated at their base, and obliquely truncated on their outer sides. Like the falces in colour, but rather paler on the inner margins.

Labium broad, short, squarish at the top. Colour yellow-brown, mottled with sooty brown; the top rather paler.

Sternum rather convex, scalloped on the margins. Similar in colour to the labium. Margins sooty brown.

Palpi short, same colour as the legs. Radial joint longer and stouter than the cubital. Digital joint hairy, large, long-oval and pointed at the end, tumid and protuberant at the base, like the undeveloped palpus of male spiders. The radial and cubital joints have two or three black bristly hairs on their upper sides.

Abdomen large, long-oval, moderately convex above, slightly glossy and of a sooty brown-black colour, thinly clothed with short pale hairs. When in spirits of wine a tolerably well-defined pattern may be traced, consisting of a longish, fusiform, longitudinal band, formed by two pale lines ending in a point at about half the length of the abdomen. From the sides of this band several fine pale lines run at a sharp angle to the side margins; and following the band are several sharply-curved lines, which span the hinder half of the abdomen towards the spinners. Under side paler than the upper, and sometimes with a strong yellowish tinge. It has an oblique pale line on each side forwards, and two longitudinal ones meeting at the spinners. All these lines are scarcely perceptible, except when in spirits of wine. The sexual organs are very large and prominent: at their extremity there is a reddish process, curving inwards and over their orifice.

Several specimens of this very remarkable spider were captured by myself among heath at Bloxworth, in the spring of 1862. It may at once be distinguished from every other known spider by its combining the characters of both the male and female sex, having the large tumid digital joint of the immature male palpus and the highly-developed female sexual organs at the base of the abdomen.

NERIENE BIFIDA.

Male, adult. Length 1-ninth of an inch. Length of cephalothorax 1-seventeenth. Relative length of legs, 1—4, 2, 3.

Cephalothorax depressed and indented in the medial line of the hinder part. Ocular region considerably and abruptly elevated, the upper part of the elevation being divided longitudinally into two segments by a deep cleft or notch. Colour yellowish red.

Eyes on deep black spots, four being placed nearly in a square on each of the segments of the frontal eminence. The outer eye of the front of each square is the largest, and the inner one the smallest of the eight. The eyes of the inner sides of the squares are further apart than those of the outer sides, which are very near together, but not quite contiguous.

Legs moderately long, and furnished with hairs, but no spines. The first pair is, if anything, rather longer than the fourth. Their colour is clear bright yellow. The femoral joints of the first pair are disproportionately stout and bent forwards at the extremities; the tibial joints of the same pair are also stout, and enlarged underneath towards their extremities, which are bent in a direction contrary to the bend in the femoral joints. The short joint connecting the tibial and femoral joints is stout and enlarged at its front extremity. The hairs on the enlargement of the tibial joints are long and fine.

Falces strong, straight, rather enlarged at their base, and like the cephalothorax in colour.

Maxillæ greatly dilated at their base, strongly inclined towards the labium, and similar in colour to the falces.

Labium and sternum darker coloured than the cephalothorax.

Palpi long and stout, remarkable in the form of the different joints. The humeral joint is very strong, and gradually enlarges from its base to its upper end, where, on its upper side rather towards the inner margin, it has a strong spur slightly directed backwards, and near this spur are a number of short, strong, sharp-pointed, black spines. The cubital joint is short and gouty. The radial joint has a long projection on its inner side, curving obliquely outwards over the digital joint, to the surface of which it closely applies, reaching almost to its extremity: this projection issues from the extremity of the joint. Above it, and issuing from the base of the joint, is a second strong projection, pointed at its extremity, but scarcely half the length of the former one. On the outer side of the joint, also issuing from its base, is a third projection, shorter and stouter than the last, and rather more obtuse at its extremity. These two last projections are strongly edged with black. Digital joint oval, with a large lobe on the outer side. Palpal organs well-developed and rather complicated: at their extremity is a fine, black, filiform, coiled spine, in contact with which is a mass of semitransparent membranous substance.

Abdomen short, oval and convex, thinly clothed with hairs, glossy and of a yellowish red-brown colour.

This spider was captured by myself among low herbage at Bloxworth, in the summer of 1861, and was at first mistaken for Nëriene rubens, to which it bears close resemblance, both in general form and appearance, and also in the form of the palpi. It may, however, be immediately distinguished from that species by the ocular eminence being divided into two segments by the longitudinal cleft above described, and which gives its eyes a totally different relative position from that of N. rubens.

NERIENE BICUSPIS.

Male, adult. Length 1-twenty-first of an inch. Length of cephalothorax 1-forty-second. Breadth 1-forty-first. Relative length of legs, 4—1, 2, 3.

Cephalothorax broad and flat, almost circular in shape, with the front part squared off. Towards each frontal corner is a moderately high tubercular eminence, surmounted by a short, strong, black cusp or spine, slightly curved, and its point directed inwards and forwards. Colour pale dull semitransparent greenish. Margins black, and a black line runs longitudinally through the centre, and several sooty lines converge towards a central point in the medial line.

Eyes in four pairs, nearly equal in size; one pair (the eyes of which are widest apart) between the tubercular eminences; the eyes of another pair, seated on a large black spot below each eminence near the frontal margin, are near together but not contiguous; the lateral pairs are seated very obliquely at the bases of the eminences in front.

Legs moderately long and strong, furnished with hairs. Colour pale semitransparent yellow-brown, the central part of each joint being strongly tinged with reddish orange-brown.

Falces strong and straight, and of a dull yellowish colour.

Maxillæ like the falces in colour; long, strong, obliquely truncated at the top on the outer side, and slightly inclined towards the labium, which is broad, short, semicircular, and of a sooty brown colour.

Palpi rather long, moderately stout, similar to the falces and maxillæ in colour. Cubital joint double the length and stoutness of the radial: the latter joint has the upper extremity produced into a longish tapering kind of spur; this projection is nearly straight, and has a dark-coloured pointed tip; it is directed slightly outwards, over the basal half of the digital joint, but does not lie flat upon it as in many other species. Digital joint of moderate size and hairy. Palpal organs highly developed and prominent, but not very complicated. A long, strong, black spine, enveloped in transparent membrane, issues from their outer side, and, curving rather forwards and downwards, forms a large loose coil on their outer and under side: the end of this spine is very fine and filiform, and projects among a mass of semitransparent membrane on the outside, near about the middle of the length of the digital joint.

Abdomen moderately convex above, glossy, and projecting over the base of the cephalothorax. Colour dark sooty brown, with a greenish tinge. It is sparingly clothed with dark hairs.

The female differs from the male in being rather larger, and in wanting the tubercular elevations and cusps on the frontal corners of the cephalothorax. I met with this very remarkable, though minute, spider in tolerable abundance on iron railings at Bloxworth, in April and May, 1862. It was commonly to be found in an inverted position, in an irregular web spun in the angles of the posts and upper rails. It may at once be distinguished from others of its genus by the broad, flat and almost circular cephalothorax, as well as by the two frontal eminences, which give it a very striking appearance. Mr. Blackwall tells me that it is allied to Theridion sulcifrons, *Wider*, a species I have never yet seen. Except for Mr. Blackwall's opinion to the contrary, I should have unhesitatingly included it in the genus Walckenäera, to which it appears to be as nearly allied as to the genus Nëriene.

WALCKENAERA TRIFRONS.

Male, adult. Length 1-eleventh of an inch. Length of cephalothorax 1-twenty-fourth. Relative length of legs, 4, 1, 2, 3.

Cephalothorax broad, obtuse, prominent, obliquely and abruptly truncated in front, thus giving the appearance of two frontal margins, a little way behind the upper one of which is a strong, abrupt, perpendicular eminence, hood-shaped, *i. e.*, convex behind and sloping forwards, but flattish in front when looked at in profile: when looked at in front, or full-face, the summit of the eminence is circular, much broader than at the base, and divided longitudinally into two segments. There is a deepish transverse indentation behind each side pair of eyes, one at the base of the eminence, and a longitudinal one in the medial line of the hinder part. Colour dark black-brown and shining.

Eyes in four pairs; one pair on the top of the eminence towards its frontal margin, and three pairs in a straight line, just below the upper frontal margin of the cephalothorax. The eyes of the side pairs are slightly obliquely placed, and those of the central pair are close together and the smallest of the eight: the other six do not differ much in size. Between the eyes at the top of the eminence there are some strong black bristly hairs, directed forwards, and meeting others which spring from the middle frontal margin.

Legs of moderate length and strength. Fourth pair slightly the longest; first and second pairs nearly equal, and the third pair shortest. Their colour is a bright yellow, tinged with orange.

Falces long, strong and very convex. In colour rather paler than the cephalothorax.

Maxillæ similar in colour to the falces, moderately long and strong, and much inclined towards the labium, which is broad, short and semicircular.

Sternum very convex, black and shining.

Palpi of moderate length, and similar in colour to the legs. Humeral joint curved inwards. Cubital joint much longer than the radial, and slightly clavate. Radial joint short, and with two projections—one, on the outer side, is broad, obtuse and concave, with a red-brown corneous process issuing from its concavity; the other, on the inner side rather towards the front, is slighter, but longer, than that on the outer side, and is bifid at its extremity. Digital joint large, broad at its base, gradually lessening to the extremity, and is suffused with brownish black. Palpal organs not very prominent nor complicated; they consist of two principal lobes: towards their extremity there are two spines—one, long, strong, corneous and black, issues from their extremity on the under side, curves round their extremity, and so on round the outer margin of the digital joint, across their base, and projects outwards in a long filiform point; the other spine is short and stout, and springs from within the coil formed by the other spine, within which it lies, curved round in an opposite direction.

Abdomen jet-black, sparingly clothed with very short hairs, oviform, very convex above, and projecting over the base of the cephalothorax. The plates of the spiracles have a greenish hue.

An adult female, captured with the male, differed in being generally lighter coloured, the cephalothorax being less prominent and obtuse, and without the eminence, characteristic of the *male* spiders only, of this genus.

This very distinct species was captured by myself on iron railings at Bloxworth, in May, 1862. The shape and position of the cephalothorax and its frontal eminence (forming, in fact, three frontal margins) are very characteristic, as also are the radial and digital joints of the palpi, and the spines connected with the palpal organs.

WALCKENAERA AFFINITATA.

Male, adult. Length 1-fifteenth of an inch. Length of cephalothorax 1-thirtieth. Relative length of legs, 4, 1, 2, 3.

Cephalothorax dark brown, much elevated and rather prominent, broad and obtuse in the ocular region, which is truncated in a sharply sloping direction from the top forwards, and thence downwards, with a slight inward curve, to the frontal margin: the slope of the hinder part of the ocular region is in a rather convexly curved line, and joins almost in the same line as the slope of the hinder part of the cephalothorax.

Eyes in four pairs, on the summit and front slope of the ocular region. Those of the two side pairs are contiguous and equal in size, and the smallest of the eight. Those of the front pair are slightly below the straight line of the foremost eyes of the side pairs, and are near together, but not contiguous; around them are some short bristly hairs. The eyes of the hinder pair are the same distance from each other as each is from the hinder one of the side pair on its side.

Legs moderately long and stout, clothed with hairs, and of a pale yellowish brown colour, blackish at the articulations of the joints.

Falces short, powerful, and of a yellow-brown colour.

Maxillæ short, inclined towards the labium, and similar to the legs in colour.

Labium broad, short, semicircular, and, with the sternum, which is broad and convex, of a black-brown colour.

Abdomen short-oval, very convex, and much projecting over the base of the cephalothorax. Its colour is a deep black-brown, with a few obscure, pale, curved, transverse lines on the upper side towards the spinners: these lines are only visible when in spirits of wine.

Palpi moderately long, same colour as the legs, except the digital joint, which is darker. Humeral joint curved inwards. Cubital joint long, rather bent downwards and clavate, notched at the end on the outer side. Radial joint short and stout, produced in front into a long strong projection, curving towards the outer side, reaching nearly to the end of the digital joint: the end of this projection is dilated, and in the form of a crescent, whose outer limb is broad, obtuse and dark-coloured; the tip of the lower limb is small, pointed and curved. Palpal organs highly developed, but not very prominent nor complicated: a large lobe at their base has its margin next to the radial joint, shining and corneous: from their extremity issue several spines; the most conspicuous is a very strong corneous one, of a dark reddish brown colour, issuing from their extremity on the inner side, and, curving across to and round their extremity, passes round their outer side, and projects its sharp point into some semitransparent membrane; another smaller, slightly curved, black spine, issues from within the curvature of the former one, and projects its point into the same membrane.

An adult female only differed in the less elevation of the ocular region.

I captured this species at Bloxworth, in May, 1861, and for some time mistook it for W. humilis, to which it is nearly allied, but from which, however, subsequent examination has shown it to differ considerably, especially in the form of the ocular region: this part, in W. humilis, is less elevated, less prominent, rises more abruptly, is more obtuse at its upper end, where it is truncated more in a horizontal line. The eyes also of the side and hinder pairs differ in their relative size and position from the corresponding ones in the present species.

WALCKENAERA ALTIFRONS.

Male, adult. Length 1-fifteenth of an inch. Length of cephalothorax 1-thirty-second. Relative length of legs, 4—1, 2, 3.

Cephalothorax blackish brown, tinged with greenish. Ocular region much elevated; face of the elevation flattish, and nearly perpendicular at the upper part. The hinder part is convex, and arched into a kind of hood shape. On each side of the base of the upper part of this elevation is a strong horizontal indentation: the lower part of the elevation forms a kind of second segment, projecting slightly beyond the upper segment, and divided from it by a transverse groove; this lower segment joins imperceptibly into the rest of the cephalothorax. The face of the upper segment is thickly clothed with short bristly palish-coloured hairs, directed forwards and downwards; the frontal margin below the lower eyes is rather prominent.

Eyes in four pairs—one on the fore part of the summit of the upper segment, wide apart and the largest of the eight: another pair on the line of division from the lower segment; these are near together, but not contiguous: the eyes of the side pairs are very nearly equal in size; they are placed obliquely and are contiguous; they are also slightly below the line of the pair on the lower segment.

Legs moderate in length and strength, of a bright orange-yellow colour, sparingly clothed with fine hairs. There is but little difference in the length of the first, second and fourth pairs.

Maxillæ short, broad, convex, and much inclined towards the labium, and of a greenish brown colour.

Labium short, convex, semicircular, and of a black colour.

Falces short, strong. Colour greenish brown.

Sternum heart-shaped, very convex, and sparingly clothed with yellowish hairs.

Abdomen longer than the cephalothorax, very convex above. Colour black. Sparingly clothed with hairs.

Palpi moderately long, and of a yellowish colour. Cubital joint slightly clavate, and about double the length of the radial joint, which is stout, hairy, and produced in front into a projection, which curves over the base of the digital joint towards the outer side, and ends in a fine red-brown point. A small, brownish, semitransparent process issues from the curvature, and projects outwards. Palpal organs complex and prominent, of a red-brown colour. Several black spines issue from them, one of which curves across the middle; another shorter and stouter, and sharply curved like a reap-hook, issues from their extremity. The female is rather larger, but resembles the male in all except the absence of the frontal elevation.

I met with adult males and females of this very distinct species on underwood at Lyndhurst, in the New Forest, in May, 1860. It is allied to W. fastigata, but in that species the division of the upper and lower segments of the frontal elevation is much more clearly and strongly marked; it differs much also from the present species both in colour and in the form of the palpi and palpal organs.

WALCKENAERA LATIFRONS.

Male, adult. Length 1-fourteenth of an inch. Length of cephalothorax 1-twenty-eighth. Relative length of legs, 1—4, 2, 3.

Cephalothorax deep blackish brown. Ocular region prominent and elevated, and divided into two segments by a deepish transverse groove; the front segment rather below, as also less large, bold and obtuse than, the hinder one, which is broad, obtusely rounded, and slightly enlarged laterally at the top: this segment has a deep horizontal indentation on each side at its base, behind each side pair of eyes. A few very short, strong, bristly, blackish, erect hairs are on the top of the hinder segment; and the summit of the front segment has a tuft of paler hairs stretching over the groove that divides it from the hinder one.

Eyes in four pairs—one pair on the fore part of the summit of the hinder segment; the eyes of this pair are wide apart, and the largest of the eight: the other three pairs are on the front segment; each pair wide apart from the other; one pair is on the black, obtusely-pointed and rather prominent summit of this segment; the eyes of this pair are smallest of the eight. The side pairs have each the front eye larger than the hinder one.

Legs not very long; stout and hairy, of a paler and brighter brown than the cephalothorax.

Falces, maxillæ and labium similar in colour to the legs, the labium being rather the darkest.

Sternum broad, convex, and of a black-brown colour.

Palpi not very long; similar to the legs in colour. Cubital joint slightly clavate, and longer than the radial joint, which is stout, and has a pointed blackish projection on the outer side, and is produced at its extremity in front into a long nearly straight projection, which stretches over the digital joint towards the inner side: from the under side of this projection there issues a conspicuous semitransparent point-process, directed downwards. Digital joint hairy, and darker-coloured than the rest. Palpal organs prominent and complicated, with several short, black, curved spines at their extremity; their colour is dark red-brown mixed with black.

Abdomen broadish and convex. Colour deep sooty black.

I captured an adult male of this species on a wall at Bloxworth, in May, 1862, and have since (in March, 1863) met with several, both males and females, among low-growing plants and moss in woods. The female differs from the male only in the absence of the ocular elevation, and in being slightly larger. Though allied to other species in the division of the ocular region into two segments by a transverse groove, it may easily be distinguished by the breadth, boldness and comparative lowness of the hinder segment.

WALCKENAERA MINIMA.

Male, adult. Length 1-twenty-second of an inch. Length of cephalothorax 1-forty-second. Relative length of legs, 1—4, 2, 3.

Cephalothorax has the ocular region moderately elevated; this elevation rises from the cephalothorax rather abruptly behind; it is obtusely rounded at the back part of its summit, from which it is truncated by a long slope to the lower pairs of eyes, where there are some coarsish black hairs. Its colour is pale yellow-brown, tinged with green, and with a strong sooty-coloured line round the base of the ocular eminence. The cephalothorax, at the upper part of its hinder slope, is slightly raised above the part that comes between it and the ocular region.

Eyes in four pairs—one pair on the top of the ocular elevation, at the commencement of the slope; these are wide apart, and the largest of the eight: the lateral pairs are just below the termination of the slope on either side; the eyes of each of these pairs are contiguous, and placed slightly obliquely; the foremost eye, if anything, rather larger than the hinder one.

Legs stoutish, not very long. Their colour is a pale yellow-brown, slightly tinged with red; and they are clothed with short pale hairs. The first and fourth pairs differ but slightly in length; the second pair is a little shorter, and the third pair shortest.

Falces of moderate length and strength, and similar in colour to the cephalothorax.

Maxillæ broad at the base, inclined towards the labium, rather rounded at the tips, and obliquely truncated on the outer sides. Similar in colour to the falces, but pale whitish at the tops.

Labium small, short, flatly curved at the top.

Sternum broad, very convex, squared off at the labium, and, with that part, of a greenish yellow colour, mottled and suffused with dark sooty brown.

Palpi similar to the cephalothorax in colour, not very long. Humeral joint bent inwards. Radial and cubital joints both short, the latter sharply bent in the middle; radial joint stoutest of the two, and produced, rather on the outer side in front, into a strong projection, which curves outwards over the basal half of the digital joint, and is bifid at its extremity: on the outer side of the extremity of the radial there is another projection, shorter than the former; it is rather obtuse at the end, and curves slightly in an opposite direction. Palpal organs not very complex, but highly developed and prominent. A strong corneous red-brown spine springs from their base rather on the inner side, curves over them and obliquely round their extremity, and so down the outer side of the digital joint, having its filiform point in contact with a semitransparent lobe near its origin.

Abdomen short-oval, very convex above, and projects slightly over the base of the cephalothorax. Its colour is a dark sooty brown, tinged with greenish.

Specimens of this very minute and rather puzzling species were met with by myself on furze-bushes and underwood at Bloxworth, in May, 1862.

In addition to the above twenty-four species, the following have come under my notice, either as new to Britain, or else as met with by *myself* for the first time; and I give them here as supplementary to the lists contained in Zool. 6493, 6862, 7553, 7945.

Family Lycosidæ.

Hecaërge nemoralis, *Blackw.* A male and female adult of this species was met with by myself among heath at Bloxworth, in May, 1862. It is chiefly distinguishable from H. spinimana by its darker colour, and by being almost wholly clothed with long, fine, silky hairs.

Family Salticidæ.

Salticus scenicus, *Koch.* The species hitherto commonly known under this name by British arachnologists appears to be Salticus histrionicus, *Koch.* My attention was first drawn to the fact that there were two species confounded together under the name "scenicus" in June, 1862, on the capture of an adult male and female of the true scenicus among heath, near Bournemouth, Hants. These, appearing to me different from the ordinary run of what I had usually considered to be of this species, caused me to examine carefully a large number of specimens captured here and in other places. The result of this was that I found two undoubted species mixed together; and on consulting, a short time after, Westring's 'Araneæ Suecicæ,' I found both species well and accurately distinguished. The commoner of the two—*i. e.*, the one I have most frequently met with, on walls of houses, gate-posts, palings, &c.—is S. histrionicus, *Koch* and *Westring;* the other, which I have only as yet met with rarely and among heath, is S. scenicus, *Koch.*

Salticus terebratus, *Koch.* An adult male and female captured by myself on a garden wall at Southampton, in August, 1862. This is its first record as a British species.

Family Thomisidæ.

Philodromus jejunus, *Panzer.* An immature female of this species (new as British) was given me in June, 1862, by Mr. Dale, of Glanvilles Wooton, who captured it among lichens on an apple tree. Since that I have met with several, both males and females, on apple trees and Scotch firs, but none adult. I am almost inclined to think it is but a variety of P. pallidus.

Family Agelenidæ.

Agelena subfusca, *Camb.* Males of this species were recorded as new to Science in Zool. 7559 and 7947; but the female has been until now unrecorded. I met with a single specimen of that sex, adult, in June, 1862, at Bloxworth.

Family THERIDIIDÆ.

Theridion stictum, *Camb.* An adult male was captured by myself at roots of heath, in May, 1862. Before that time only females had been observed.

Theridion riparum, *Blackw.* I met with an adult male of this species under the rooty ledge of a sand-bank at Bournemouth, Hants, in June, 1862.

Family LINYPHIIDÆ.

Neriëne parvula, *Westring.* An adult male and female on iron railings, at Bloxworth, in May, 1862. New to Britain.

Neriëne dentata, *Wider.* An adult male and female on the woodwork of an old weir, near Bloxworth, in June, 1862.

Neriëne abnormis, *Blackw.* An adult male and immature female at roots of heath, at Bloxworth, in May, 1862.

Neriëne dentipalpis, *Wider.* This species is very closely allied to Neriëne longipalpis, and has long escaped distinction from that species by British arachnologists. Mr. Blackwall lately called my attention to its distinguishing peculiarities, by a reference to its description in Westring's 'Araneæ Suecicæ;' and on examining my specimens of N. longipalpis I found many specimens of N. dentipalpis among them. This is its first record as a British species, though the credit of its discovery is due entirely to Mr. Blackwall.

Walckenäera hiemalis, *Blackw.* An adult male of this species was met with on iron railings, at Bloxworth, in May, 1862. The species recorded as W. hiemalis (Zool. 7561) appears, on examination, to have been so named by mistake; and it turns out to be a very distinct and undescribed species; *now*, however, described above, under the name of W. altifrons.

Walckenäera obscura, *Blackw.* An adult male on iron railings, at Bloxworth, in April, 1862; also one in March, 1863, in the same place.

Walckenäera picina, *Blackw.* Males and females (adult) of this species tolerably abundant on iron railings, at Bloxworth, in April and May, 1862.

Walckenäera fuscipes, *Blackw.* Males and females (adult) among moss in woods, and one male on iron railing, Bloxworth, in March, 1863.

Family EPEIRIDÆ.

Epëira patagiata, *Koch*. A male adult, and both sexes immature, of this species, on trees and furze-bushes, at Bloxworth, in a low damp situation, in June, 1862.

Tribe SENOCULINA.

Family SCYTODIDÆ.

Savignia frontata, *Blackw*. Males of this remarkable species were not rare on iron railings, at Bloxworth, in March and April, 1862, and in March, 1863. Mr. Blackwall, unable to discover a fourth pair of eyes in this species, has included it (in its present position) among the six-eyed spiders (Senoculina). I have constantly fancied myself able to discover a fourth pair, though sometimes with great difficulty, at the apex of the frontal eminence; and I am borne out in my idea by the microscopical investigations, directed specially to this point, of Mr. Richard Beck (Lister Works, London); though, as the matter at present stands, Mr. Blackwall is yet doubtful on the point. Westring describes this species under the name Erigone conica ('Araneæ Suecicæ,' p. 220); and he there says, "Oculos duos intermedios anticos, ægre observandos," which exactly agrees with my own observations. In the event of its being decided to have *eight* eyes, it will have to be removed to the genus Walckenäera, with which it agrees in all generic characters, as well as by its general form and size.

O. PICKARD-CAMBRIDGE.

Bloxworth, Blandford, Dorset,
April 1, 1863.

On the Name "Lithosia molybdeola."—The Rev. Joseph Greene having mentioned my name (Zool. 8468) in connexion with the Lithosia molybdeola of Guenée, I feel compelled, though very reluctantly, to say a few words on the subject. I admit that Mr. Gregson's name "sericea" was published in the 'Intelligencer' before my friend M. Guenée's 'Monographic Notice of the European Species of the Genus Lithosia' appeared in the 'Transactions of the Entomological Society of France;' but the practice of describing new species in ephemeral periodicals like the 'Intelligencer' is very objectionable.* In October, 1859, I sent specimens of all our Lithosiæ (except L. quadra and L. rubricollis) to M. Guenée, and among them two which Mr. Greening had kindly given to me some time previously. Soon afterwards I received a letter from M. Guenée, acknowledging the safe arrival of the insects, and containing a few hasty remarks upon some of them. He says of Mr. Greening's specimens:—"The two small individuals with clouded under wings, and abdomens gray as far as the anus, which you have sent as curious varieties of L. complana, appear to me to belong to a distinct species, which I shall design provisionally under the name of L. molybdeola. I wish you to say nothing of this at present, as they demand a more attentive examination than I have yet been able to give them." On the 11th of April, 1860, I received another letter from M. Guenée, in which he said that his opinion was unchanged with regard to the northern Lithosia, but he wished to see more specimens, and especially females, and was very desirous that the larva should be discovered. A few days afterwards I wrote to Mr. Gregson on the subject, and received a letter in reply, from which I will quote what relates to this insect: — "I was delighted to see your letter this morning, and will forward you some of our Lithosia from my cabinet. We have often remarked the dark under wings of our specimens; but we rarely see any from the South. I have one in my cabinet from the New Forest, as a variety. Females are scarce with us, as they do not fly much. I found one just creeping out of the lichen which covers the part of the moss where we take this insect. There are no trees, posts, sticks, or anything else, except the usual low herbage of the swampy part of our moss where this insect flies. It seems to be attached to the crisp lichen which grows on the flat parts of the moss. How we are to find the larva remains to be seen; however, I hope it is in good hands: what can be done will be done. It is always a pleasure to me to assist any one in working out the history of an insect, and especially you, who have so often assisted me." In the following autumn Mr. Greening wrote to me, and said that Mr. Gregson had read a description of this Lithosia at a Meeting of the Northern Entomological Society, and named it "sericea." I certainly was surprised when I heard this, and wrote to him saying that as he was aware that M. Guenée was at work upon a Monograph of the European species, I regretted his attempt to supersede him with regard to this insect. Mr. Gregson appears to have written a letter which I never received, but in a subsequent one he repeats what he said in that which was lost, *viz.*, that I did not tell him that M. Guenée was engaged upon a Monograph of the genus Lithosia, but only said that he was studying it. I had mentioned it to most of my friends, and supposed that Mr. Gregson was perfectly cognizant of M. Guenée's intention of publishing the result of his labours. I also think that, after what had passed between us, it would only have been an act of common courtesy on the part of Mr. Gregson to have mentioned to me his intention to name the insect before doing so. I will quote the admirable remarks of Major Parry upon this subject, published in the last part of the 'Transactions of the Entomological Society of London:'—"It certainly is very unimportant to Science in general, so long as new and interesting species are described, whether A or B describes them; but it is important to those connected with Science that there should exist a rigid system of mutual courteous consideration, with an entire absence of petty scientific jealousy." At the September Meeting of the Entomological Society, Professor Westwood said that the time required for composing and publishing Monographs was often very considerable, and much delay occurred, over which the monographer had no control: in such cases he thought that courtesy to the monographer should give him precedence over the authors of at least such descriptions of detached species as appeared during the year in which the Monograph should be published.—*Henry Doubleday; Epping, April* 10, 1863.

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* M. Guenée's paper upon the European Lithosiæ was read at the Meeting of the Entomological Society of France, on the 12th of December, 1860, and published immediately afterwards in the 'Annales.'

[I beg this subject may now be dropped: it is evident that my friend Mr. Doubleday has never had any selfish feeling with regard to Entomology, but has always done everything in his power to assist his fellow-labourers in the science. It may be thought by most of my readers that there was no necessity for even this reply on his part; but to me it seems that a feeling of courtesy to Mr. Greene demands the explanation Mr. Doubleday has now given. I may add that I entirely and heartily concur in the spirit of the passages Mr. Doubleday has cited from Major Parry and Professor Westwood, and I should decline to enter into the question whether the description of M. Guenée or Mr. Gregson were the first printed. Mr. Gregson will, I trust, kindly accept these lines as an intimation that I respectfully decline his rather voluminous paper on the same subject.—*Edward Newman.*]

Remarks on a few Rare British Species of Lepidoptera.

By Mr. Thomas Huckett.*

Having for a short time in my possession continental specimens of some of our rarer British species of Lepidoptera I have taken the liberty of bringing them for exhibition, thinking that some of the members would feel interested in seeing a few of those species of which they may have heard, but have seen, perhaps, very little.

The species I exhibit are Pieris Daplidice, Argynnis Dia, Vanessa Antiopa, Lycæna Bœtica, Polyommatus Hippothöe, P. Chryseis, P. Virgaureæ, Sphinx Pinastri, Deilephila Euphorbiæ, Chœrocampa Nerii and Deiopeia pulchella. On some of these I have made a few remarks, which, with your permission, I will read.

Pieris Daplidice. Of this insect specimens have occurred in various parts of the country, according to the various notices of capture that have appeared from time to time in the 'Zoologist' and 'Intelligencer,' but its principal locality I believe is Dover, where our late member, Mr. Harding, took a specimen in 1860. This species is considered by most of our first entomologists to have good claims to be British, from one or two specimens occurring nearly every year, but whether the insect is, or ever was, a resident in this country is doubted by many, of whom I am one. Some of the members may ask, How is it possible they could be caught were they not to breed here? This question can be answered in more ways than one. The coast of France, where this insect may be taken very commonly, being such a short distance from Dover, offers easy access to our shores by the following means. Suppose a ship bound for this country from France,—what is to prevent an insect taking refuge on board or in the rigging, passing a few hours away in rest after a long flight, and before it wakes from its dream being carried to a foreign country to die alone, far from all its relations. This mode of immigration is not merely a surmise of my own, but I have been informed that an insect was observed to travel from one country to another in the manner described.*

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* Read at a meeting of the Haggerstone Entomological Society, April 9, 1863.

It is also a known fact that insects of various orders, including Lepidoptera, have the power of keeping on the wing a long time, and flying an immense distance, quite far enough to bring them from the shores of France to those of England. In confirmation of what I have written I extract a few lines from an article by the late Mr. Wolley in the fifth volume of the 'Zoologist' (Zool. 1900). He says, "Migratory flights of butterflies of various species have often been observed. Swarms of white butterflies have been actually seen to arrive at Dover. Can we doubt that the Sphinx Convolvuli as well as the locusts of last year, the Colias Hyale of two or three years before, the Vanessa Antiopa of some score years since, and also the occasional specimens of V. Antiopa, of Pontia Daplidice, of Argynnis Lathonia, and perhaps even of Papilio Podalirius, are arrivals from the Continent? Might we not even extend this to Colias Edusa, and consider it a more regular immigrant? Nay, the common Cynthia Cardui is a notoriously migratory butterfly, not even fearing to cross the snow of the highest Alps." With this extract I think I have clearly answered the question I thought would be asked by some of the members, How was it possible to take insects in this country that did not breed here? but I may observe that what I have written on the migration of insects is not confined to P. Daplidice, but will apply equally to most of the other species I exhibit.

Vanessa Antiopa. This butterfly has good claims to be called British from its repeated occurrence in Great Britain, though I can find but little evidence that the larva has ever been found in England. In 1859-60 a goodly number of this species were taken, but from what cause they should occur plentifully in one year and entirely disappear the next is a question yet to be solved, and one which opens a wide

* A relation of mine on leaving the pier at Calais observed the rigging of the steamer to be crowded with "white butterflies," which never left the position they had taken up during the passage. Whether they returned with the packet, and whether they were P. Rapæ, P. Napi or P. Daplidice I have no means of forming even a guess.—*E. Newman.*

field for investigation, for it is a subject that concerns a number of other species besides V. Antiopa.

Argynnis Dia. This insect is rather common in various parts of the Continent. Its claims to be considered British rest on the observations of the late Mr. Stephens in his various works on Lepidoptera; but in Mr. Newman's work on 'British Butterflies,' after noticing Mr. Stephens' observations, we read, "This insect has not the slightest claim to be considered British." But there is a notice of the capture of this insect of much later date than Mr. Stephens'. In the 'Intelligencer' for November 21, 1857, will be found an announcement of the capture of a specimen by a village lad, who knocked it down with his cap. Some doubt being thrown on the authenticity of the capture, in a communication which followed, caused the Hon. Charles Ellis to send a notice to the editor of the 'Intelligencer' to the effect that he himself had taken the specimen in the Rev. S. Hodson's garden, at Cookham Dean, near Maidenhead. Thus we see there were two recorded captures of one specimen. As might be expected a great number of communications followed an announcement so opposite to that first published. These conflicting statements seemed to confirm the doubts already existing on the subject, in which I fully participate, and think Mr. Doubleday perfectly justified in placing it among the reputed British species.

Lycæna Bœtica. This insect is of very rare occurrence in this country: the only notice of its capture is in the 'Zoologist' for 1859, by Mr. Newman, and conveys all the published information on the subject, from which I extract a few lines. He says, "I am indebted to Mr. Thomas Thorncroft, of North Lane, Brighton, for the information that a new butterfly had been taken near the Chalk Downs, on the 5th of August, 1859. The fortunate captor is Mr. M'Arthur of Brighton. The insect is common on the Continent, and simultaneously with its appearance at Brighton was seen in profusion along the northern coast of France and in the Channel Islands, so that its appearance here does not appear remarkable; nevertheless it can only be regarded, like P. Daplidice and C. Nerii, a purely casual visitor."* Thus we see that Mr. Newman considers the specimen to have blown over or migrated from the coast of France to that of England, and I think this the most correct view that can be taken, and should have great doubts about calling this a British species until some half dozen or more specimens had been caught.

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* I have seen a second specimen taken near the same locality, of the authenticity of which I have not a shadow of doubt.—*E. Newman.*

Lycæna Acis. There is no doubt of this insect being a good British species, though now of very rare occurrence. Notices of the capture of this species have appeared in the 'Zoologist' and 'Intelligencer' on one or two occasions from various parts of the country, and in 'Young England' for 1860 is a notice that the insect had been taken in Epping Forest by a gentleman living in the neighbourhood of the Caledonian Road, but of this capture I have very grave doubts. I think it more likely that the person who took the insect had mistaken a specimen of L. Argiolus to be L. Acis. As the under side of the two have some resemblance I think there is a chance of a mistake having been made, and it will not be the first time that such a blunder has occurred: I will relate an instance of mistaken identity. It is in the recollection of some of the members that a notice appeared in one of the earlier numbers of the 'Intelligencer,' signed by a late member of this Society, stating that he himself had taken a specimen of Pieris Daplidice at South Weald, Essex, and also recorded a second specimen taken in the same locality. This notice, as might be expected, raised doubts in the mind of some of our entomologists, and was the means of inducing one of them to visit the lucky captor, when, alas! both the specimens were pronounced without any hesitation to be females of the common orange-tip (*Anthocharis Cardamines*). Now, when A. Cardamines is taken and named as P. Daplidice I think I may be allowed to entertain doubts as to the correctness of the naming of a Lycæna Acis said to have occurred in Epping Forest. Its principal locality is near Leominster in Herefordshire, where Mr. Newman used to take it in considerable numbers, and where he still believes it has continued to abound.

Polyommatus Hippothöe. This beautiful insect is I fear now extinct in this country, but there is no doubt whatever that it was once a good British species, though now numbered with things of the past. The locality where it used to be taken in rather considerable numbers was the Fens of Cambridge and Huntingdonshire. Let us then inquire how it is possible that an insect once occurring commonly should be entirely exterminated. It is of course known to the greater part of the members that owing to agricultural improvements a large portion of the fens and marshy places in the country have been drained and turned into meadow land, and, since the food-plant of this insect grows in such places, it has been to a large extent destroyed, and thus the species has been restricted to places of small extent, where, owing to its gorgeous colours, it has been an easy and tempting prey to all who sought it. And I think the brightness of its wings has had a great deal to do towards its extermination in this country, for who could have passed a large copper, whether an entomologist or not, without trying to catch it!

Polyommatus Chryseis. With this insect I am but little acquainted, but it is the opinion of many entomologists that the species has never occurred in this country, though it has been described in some of our works on Lepidoptera. I have copied what Mr. Newman says of this species in his work on 'British Butterflies:'—"An inhabitant of Europe. It is described by all our authors, yet no one, as far as my information extends, pretends to be the possessor of a single specimen."

Polyommatus Virgaureæ. I copy again from Mr. Newman for my information respecting this species. "An inhabitant of Germany and France. It is described without hesitation as a British species, but exists nowhere, unless in the imagination of the writers."

Sphinx Pinastri. This species is of very rare occurrence in this country, but is common on the Continent in several places. Records of the capture of this insect have been published from various parts of the country, though its claims to be called British do not appear to be considered sufficient, Mr. Doubleday placing it among the reputed species in his list.

Deilephila Euphorbiæ. This species, like the preceding, is also of very rare occurrence in this country, though common in various parts of the Continent, and especially in the British island of Jersey, from which Mr. Newman received a number of the larvæ two or three years ago. The insect was formerly taken in England by the late Mr. Raddon, who found the larvæ for several years on the sea spurge in some numbers. It has therefore good claims to a place in the list of British Lepidoptera. Mr. Newman speaking of this species says, "It has never been found in the perfect state in this country."

Chærocampa Nerii. This beautiful moth, like the two preceding, is also of very rare occurrence in this country, but is not at all scarce in various parts of Europe. I think it is the opinion of all entomologists that the specimens taken in this country have arrived here by migration and other means, and have not bred from native larvæ.

Deiopeia pulchella. Of this species Mr. Newman, in his work on 'British Moths,' says, "Mr. Doubleday has a single specimen, taken at Epping, and I believe there are two or three other specimens in different cabinets." So by Mr. Newman's account this insect is very rare in this country, though not so I believe on the Continent.

With this species I bring my few remarks to a close, trusting I have not occupied the time and attention of the Society without imparting a little information, if not to all, to at least a few of the members. In conclusion I hope what I have read will be the means of inducing a discussion, and thus eliciting more information than I am able to impart.

THOMAS HUCKETT.

April 9, 1863.

Description of the Larva of Papilio Machaon.—Head much narrower than the body: body nearly uniformly cylindrical, but having the segmental divisions strongly marked; every part of the body emitting very short stiff black bristles; these are abundant and conspicuous on the 12th and 13th segments. Head green, with a yellow spot in the centre of the face; a black spot below this and above the mouth; two longitudinal black stripes down the face; a large spot outside these on each cheek; and a smaller black spot on each side of the mouth: ground colour of the body delicate green, the second segment having three black spots immediately behind the head, and again behind these spots is a transverse slit from which the larva can protrude at pleasure, but more particularly when annoyed, two yellowish divaricating processes, the use of which is not known; at the same time the creature emits a disagreeable scent; the interstices of the segments are velvety black and unspotted, and every segment, except the 13th, has also a transverse jet-black velvety band, in each of which, except that on the 2nd segment, are six bright orange-coloured spots; the 2nd segment has the black band unspotted, and the 13th segment has its place supplied by four roundish black spots; there is also a roundish black spot above the insertion of each leg, and two roundish black spots above each clasper; the side of each clasper is also black; the ground colour of the belly is paler green than the back, and is adorned with a series of large black markings. It feeds on Peucedanum palustre (hog's fennel) and Heracleum sphondylium (cow parsnep), and also in gardens occasionally on rue, and in confinement thrives very well on the leaves of carrot: when full-fed it ascends the reed-stems in the neighbourhood of its food-plant, and assuming a vertical or ascending position, fastens itself to the reed-stalk by its tail and by a silken belt round its body; it then turns to a chrysalis of a uniform pale yellow-green colour, the anterior extremity having four lobes or protuberances ranged transversely, the exterior ones much larger than the others; the thorax also has three distinctly pronounced prominences, one on each side, the others dorsal and median. It remains in the pupa state throughout the winter, and the perfect insects begin to emerge in the following May, and continue emerging until August; a constant succession of individuals appear on the wing, thus giving some colour to a prevalent belief that there are two or more broods in the year, a belief at variance with the facts that have come under my notice.—*Edward Newman.*

Description of the Larva of Melitæa Cinxia.—Falls off its food and rolls itself into a tight compact ring when disturbed. Head distinctly exserted, distinctly notched on the crown, hairy, obviously of less diameter than all the other segments, except the 2nd and 13th. Body obese, slightly decreasing in size at the extremities, incisions distinctly marked; on each segment are eight warts in a transverse series, each prolonged into a pointed conical process with rugose surface, and each seated in the midst of a fascicle of short stiff radiating bristles. Head red, shining, its hairs black: body intense velvety black, with belts of pure white dots in the incisions between the segments, its hairs intensely black; legs pitchy black; claspers dull red. Feeds on Plantago lanceolata (ribwort or narrow-leaved plantain), and is full-fed at the end of April, when it attaches itself by the tail to the stem of the plantain, almost close to the ground, and there changes to a short stout pupa, which is of a very dark colour and almost smooth. I have found dozens of the pupæ in company. The insect remains but a short time in the pupa state, rarely more than a fortnight, sometimes less; they continue to emerge during the whole of May and June, and continue on the wing, although in a very dilapidated condition, until the end of that month. The early history of this insect has already been given in the 'Zoologist' (Zool. 1271), by the able pen of the Rev. J. F. Dawson. The eggs are laid in batches on the plantain, and are hatched in August; the larvæ unite in spinning a web very compact and tent-like, forming a weatherproof domicile in which they hybernate. I had the good fortune to discover the now-celebrated habitat for this insect in the Isle of Wight, in 1824, finding larvæ, pupæ and perfect insects, but am induced to republish these particulars, Mr. Wright having kindly placed a full-grown larva in my hands.—*Edward Newman.*

Description of the Larva of Macroglossa stellatarum.—Rests in a straight posture, with the feet and claspers holding its food-plant; never rolls in a ring when disturbed. Head of much less diameter than the body: body cylindrical, decidedly tapering towards the head, and having an acute straight horn on the 12th segment. Colour of the head glaucous-green, powdered with white points so minute as only to be visible under a lens of a high power: body glaucous-green, irrorated with circular white dots, which are arranged, although somewhat irregularly, in transverse series; on each side is a pure white stripe, commencing almost close to the head, and terminating in the caudal horn; the green colour above this is rather more intense, making the white stripe more conspicuous; caudal horn blue at the base, black in the middle and orange at the tip; it is covered with scabrous points, each of which emits a bristle at the extremity; spiracles black, with an orange point at each extremity; below the spiracles on each side is a slightly waved pale yellow stripe, commencing immediately behind the head, and terminating on the 12th segment; margin of the anal aperture yellow; legs pinkish orange; ventral claspers with a black patch at the base, a white stripe in the middle, and rose-coloured at the extremity; the white portion emits minute bristles; anal claspers pink only. Subject to vary to a red-brown colour. Feeds on Galium verum (ladies' bedstraw), and in confinement on Asperula odorata (sweet woodruff). I am indebted to the late lamented Mr. Hubert Oswald Fry and also to Mr. H. J. Harding for examples of these larvæ, which were full-fed on the 10th of August, 1861. By day they are generally to be found close to the ground, secreting themselves beneath the plants on which, by night, they feed.—*Id.*

Description of the Larva of Ino Statices.—Hybernates when very small at the roots of grasses, &c.; feeds again in April and May. When disturbed it falls to the ground, assuming a crescentic form, the two extremities approaching, but not touching. Head very small, withdrawn entirely into the 2nd segment except when the larva is feeding: body obese, decreasing in size towards both extremities; the incisions between the segments deep and well marked; each segment has six flattened warts ranged in a transverse series, none of them very conspicuous, but each emitting a thin radiating fascicle of short stiff bristle-like hairs, among which are interspersed a few longer silky hairs; every part of the upper surface, the warts alone excepted, is covered with minute elongate black papillæ, which, viewed sideways, impart a black tint to the surface; these minute papillæ remind one forcibly of those stalked glands often observable in plants having a viscous surface. Median line of the back obscure white, narrowly bordered on each side with reddish purple; adjoining these narrow borders is a broad yellow stripe, swelling into a rounded lobe on each segment; below this stripe the sides are reddish purple; belly and claspers dingy yellowish white, legs shining black. In general appearance, and in some of its characters, this larva resembles that of Limacodes Testudo, while its hirsute warty surface reminds one of the ursine group; it differs but little in any important character from Zygæna, and certainly, in connection with that genus, constitutes a family exactly intermediate between the Cochliopodidæ and that large group to which Nola and Lithosia belong. Its food-plant is Rumex acetosa (sour dock or sorrel); it is full fed at the end of April, when it spins a white, very thin but very tough cocoon, attached to the stems of grasses, and in this it changes to an obese brown pupa, the anterior extremity of which is rather acute, the posterior remarkably obtuse; the dorsal surface is evidently incised at the division of the segments as in the larva, and the posterior margin of each segment slightly projects over the anterior margin of the segment next following; the wing-cases are ample and well-defined, and the cases of the legs extend slightly beyond the extremity of the abdomen. The perfect insect appears in June. I am indebted to Mr. Wright for the opportunity of describing this larva.—*Edward Newman.*

Description of the Larva of Zygæna Filipendulæ.—Hybernates when very small at the roots of grasses, &c.; feeds again in April and May. Rests in a straight posture, with both legs and claspers attached. Falls off its food-plant when touched or disturbed, feigning death and rolling itself in a ring, the extremities meeting. Head very small, retractile within the 2nd segment: body short, obese, somewhat onisciform, slightly decreasing in size towards each extremity; the incisions between the segments deep and distinct. Head shining black, with the clypeus and a spot at the base of each antennal papilla yellow; ground colour of the body dull yellow-green, with six longitudinal series of velvety black spots; one series, consisting of ten spots, on each side of a median dorsal line, one series on each side just above the spiracles, and one series below them on each side of the ventral surface; each spot in the dorsal series, when the larva crawls, is distinctly seen to be double or composed of two spots, one on the anterior and the other on the posterior margin of each segment; when the larva is at rest these meet so exactly that each pair has the appearance of a single spot; the lateral series is composed of spots, which are still more evidently double; and the third or ventral series on each side is composed of still smaller and less distinct spots, and on account of its situation is very imperfectly visible from above; it is continued as a band round the posterior margin of the 12th segment; each segment has eight rugose patches or flattened warts arranged transversely, and each of these emits a thin radiating fascicle of short silky hairs, each individual hair emanating from a minute black dot; the hairs are either black or pale, the latter predominating. The legs are opaque green at the base, black and shining at the apex; the claspers dull green, their fringe of recurved hooks black. Feeds on Lotus corniculatus, Anthyllis vulneraria and other leguminous plants. Is full-fed in May, and spins a bright yellow glossy shuttle-shaped cocoon, very acute at both extremities, attached to the upright flowering stems of grasses; in this it changes to a smooth black shining pupa, from which the perfect insect emerges in June and July.—*Edward Newman.*

Occurrence of Xylomiges conspicillaris at Worcester.—I had a fine specimen of Xylomiges conspicillaris out, on the 14th of April, from a number of mixed pupæ dug under elm and oak. At present I have only had one out of 550 pupæ. Last year I also had one from about 700 pupæ, but it was unfortunately cramped.—*E. Horton; Wick, Worcester, April* 21, 1863.

Parasites and Hyperparasites.—In the course of last summer an investigation was instituted into the identity or otherwise of a pair of species of Lepidoptera, both of which are somewhat mouse-coloured and might be called without impropriety the town mouse and the country mouse. Both are common, very common, but there is this difference; one, Boarmia rhomboidaria of London collections, is confined to London, and looks dingy and very smoky, as though it had lived for centuries in this smoky city; the other, Boarmia rhomboidaria of Guenée, looks bright and fresh, and as though it had always lived in the country. I propose to leave the country insect in undisputed possession of Guenée's name, and to rechristen the cockney race Boarmia perfumaria, not on account of any delicious perfume it exhales, but because its appearance is so very, very smoky. Now as far as my investigations have yet proceeded there seems a constant although not great difference between the larvæ of the two species, a subject on which I trust I shall hereafter be able to dilate greatly to the edification of the readers of the 'Zoologist;' but I will not forestall. I have only to say now that the larvæ of Boarmia perfumaria have an occasional habit of not producing any Boarmia at all, but a neat little structure which vastly resembles a honeycomb in miniature. This structure is pronounced by Mr. Smith to be the habitation of a gregarious parasite, Microgaster alvearius, yet so great is its perversity that it refuses to produce Microgaster alvearius, and has produced instead two distinct species of Hymenoptera, the first of which appears to be parasitic on the second. They belong to the genera Pteromalus and Tetrastichus, and the species being both heretofore undescribed I have appealed to my friend Mr. Walker in their behalf, and he, with his customary courtesy, has written descriptions, which, being the pith and marrow of my communication, I arrange as a postscript. How the Pteromalus contrived to introduce its eggs into the Tetrastichus, and how the Tetrastichus managed to oust the Microgaster must for the present remain open questions for the consideration of the learned.—*Edward Newman.*

PTEROMALUS BOARMIÆ, *Walker.*

Fœm. Æneus, subtilissime punctatus; caput thorace paullo latius; antennæ nigræ, subclavatæ, thorace vix breviores, basi fulvæ; prothorax brevissimus; scutum subdepressum, parapsidum suturis vix conspicuis; metathorax viridescens, tricarinatus; abdomen subsessile ellipticum, nigricante cupreum, basi æneoviride, thorace paullo longius; pedes fulvi; alæ limpidæ.

Female. Bright green. Antennæ black, clavate, shorter than the thorax. Thorax elliptical, with the usual structure. Abdomen somewhat lanceolate, longer than the thorax; hind borders of the segments dark cupreous. Femora and tibiæ with yellow tips; tibiæ yellow at the base; tarsi black. Wings limpid; veins black; ulna longer than the humerus; radius obsolete; cubitus of the usual length; stigma extremely small. Length of the body 1$\frac{1}{3}$ line$\frac{1}{4}$; of the wings 2 lines.

TETRASTICHUS DECISUS, *Walker*.

Fœm. Læte viridis; antennæ nigræ, clavatæ, thorace breviores; thorax ellipticus; abdomen sublanceolatum, thorace longius, segmentorum marginibus posticis cupreis; femora tibiæque apice, tibiæque basi flava; alæ limpidæ, venis nigris.

Female. Dark æneous. Head and thorax extremely minutely punctured. Head a little broader than the thorax, slightly impressed between the eyes. Antennæ black, subclavate, inserted near the mouth, almost as long as the thorax; first joint tawny, long, slender; second elongate-cyathiform; third and fourth extremely short; fifth and following joints short, successively decreasing in length to the tenth; club lanceolate, longer than the ninth and tenth joints. Thorax nearly elliptical. Prothorax very short. Scutum somewhat depressed; sutures of the parapsides very indistinct. Metathorax greenish, of moderate size, with three slight keels. Abdomen subsessile, elliptical, blackish cupreous, concave above, flat beneath, æneous-green at the base, acute at the tip, a little longer than the thorax. Legs tawny; coxæ æneous. Wings limpid, with a diffuse indistinct brownish patch behind the ulna; veins brown; ulna about half the length of the humerus; radius shorter than the cubitus, and hardly half the length of the ulna. Length of the body 1$\frac{1}{2}$ line; of the wings 2 lines.—*F. W.*

Capture of a Bembidium new to the British Fauna in the North of England.—On the 2nd of this month I had the pleasure of capturing three specimens of Bembidium [Tachys] Fockii, *Hummel*, beneath stones on the sea-shore near South Shields. It is an insect of a very peculiar form, with broad, short and convex elytra. Some difficulty was met with in determining its genus, owing to the peculiar shape of the maxillary palpi, which have the second joint very large, and apparently without a minute terminal joint. Mr. Waterhouse, however, with his usual acumen, detected this joint, and furnished me with its specific name. It appears to be nowhere common, but nevertheless is very widely distributed, France, Tyrol, Switzerland, South of Europe, Madeira, Caucasus, Algiers and Syria being given as its habitats.—*Thomas John Bold; Angus' Court, Bigg Market, Newcastle-on-Tyne, April* 23, 1863.

The British Species of Helophorus.—Some remarks made by Dr. Schaum, during his late visit to England, led me to think some confusion existed in our species of the genus Helophorus, particularly in H. dorsalis; for the species standing as H. dorsalis of Marsham in our collections and those described by Erichson and Mulsant are all three different. When in Paris, in the winter, I took the opportunity of comparing a series of our British species with the rich collections there, and came to the conclusion that we have eleven species, *viz.*:—

1. H. rugosus, *Oliv.* Common.
2. H. nubilus, *Fabr.* Common.
3. H. intermedius, *Muls.* This I found not rarely at Liverpool last autumn in brackish water.
4. H. aquaticus, *Linn.* Common and very variable in size.
5. H. dorsalis, *Muls.* I obtained a fine series of this species at Liverpool. It is readily distinguished from H. granularis by its superior size and crenate striæ. H. lapponicus, *Thoms.*, must be very near this species from the description.
6. H. griseus, *Herbst.* The largest of the common small Helophori, and recognisable by its generally unicolorous elytra.

7. H. granularis, *Linn.* The commonest species, and very variable.

8. H. æneipennis, *Thoms.* About the size of H. griseus, with the elytra subæneous and the legs darker; the interstices of the striæ are also clearly more convex. This species and the two preceding were united by Mulsant, in his 'Palpicornes,' under the name H. granularis, and it is very possible that they may be found analogous to those found in Hydrobius globulus or Laccobius minutus.

9. H. nanus, *Sturm.* Formerly taken in Cambridgeshire, I believe, but I have never met with it. The smooth interstices of the thorax render it unmistakeable.

10. H. quadrisignatus, *Bach.* This is the species which generally stands as H. dorsalis in our collections; it is found, I believe, in brackish water near Gravesend. The dilatation and pattern of the elytra sufficiently characterize it.

11. H. arvonicus, *Muls.* All the specimens I have seen of H. pumilis of Erichson belong to this species. The true H. pumilis is a much shorter and broader insect. This may be recognised from our other indigenous species by the subcarinate interstices of its elytra.

While on the subject of Philhydrida, I may mention that I have identified as British the Philhydrus frontalis of Erichson and P. ovalis of Thomson from types sent me by Mr. Thomson.—*G. R. Crotch.*

Description of two new Species of Mycetoporus.—

MYCETOPORUS LONGICORNIS, (*Mäklin, Symbol.* 12, 11?); *Kraatz, Ins. Deutschler.* ii. 467, 14.

M. splendidus, *var.* 2, *Erichs. Gen. et Spec. Staph.* 287, 9.

I have recently taken, near Croydon, an example of this species (hitherto, I believe, unrecorded as British), and have since detected in Mr. Waterhouse's collection four other specimens, including one male, taken by him, at different times, near Erith and Croydon. It is closely allied to M. splendidus, but differs from that species in the following points:—In the first place, it is apparently always larger, somewhat flatter and broader, the thorax especially being wider; and I may here remark that the unvarying size of "one line" given by Kraatz for M. splendidus is evidently erroneous, as I have seen examples of that insect sent over by Kraatz himself, and which are precisely the same as our common species of that name, for which the smallest length given (and correctly so) by Erichson is one line and a half. Besides the above-mentioned differences of size and shape, M. longicornis also differs from M. splendidus in having the joints of the antennæ comparatively not quite so stout, with the terminal joint more oblong-ovate, and in the punctuation of its abdomen on the upper side being rather more remote. In colour also it differs very considerably, being more uniformly rufo-testaceous, with only a slight scutellar patch, and merely the base of the abdominal segments (especially the fifth and sixth) more or less pitchy; whilst M. splendidus has the head and often the greater portion of the elytra, pitchy or even black, and the abdomen more or less black, with the outer margins of the segments testaceous; beneath, in both species the metathorax is dark (but blacker in M. splendidus), and the under surface of the head is rufo-testaceous in M. longicornis, but black with the gular area yellow in M. splendidus. The antennæ, moreover, in M. longicornis are altogether lighter in colour, the *three* first basal joints being especially lighter, whilst in M. splendidus the *first* joint only is light. The principal distinguishing characters, however, of the two species are to be found in the male of each; in M. splendidus the sixth segment of the abdomen in this sex on the under side is widely emarginate, the sides set with stiff black hairs, and the emargination itself filled up with a very thick bushy fringe of stout yellow hairs; the seventh segment is more deeply, but not so widely emarginate, the emargination having its sides also thickly fringed with stout yellow hairs and terminating at its upper and smaller end in a thick button of similar golden pubescence, the whole forming a very stout semi-erect cushion, slightly curved towards the apex of the abdomen. In M. longicornis the sixth segment is very gently emarginate, the sides set with stiff black hairs, and the emargination fringed with very short fine yellow pubescence; whilst the seventh segment is not so decidedly emarginate as in M. splendidus, the emargination being edged with short slight yellow hairs, and terminating at each outer angle in a pencil of long golden pubescence, the flat part of the under surface of the segment being clothed with very short fine yellow down. Altogether a very different appearance is presented when compared with the same parts in M. splendidus, and the distinctions are most easily seen by looking sideways at the apex of the under side of the male in each against the light, when M. splendidus will be found to exhibit a much more conspicuous and erect mass of hairs, &c. Fairmaire (Faune Franc. iii. 496, 13) considers M. longicornis a variety of M. splendidus,—as usual, ignoring the structural characters; "nimium ne crede colori" would be a good motto for a criticism on his work. The present position of both M. splendidus and M. longicornis at the end of the genus appears to me very unsatisfactory. How can they be allied to such an insect as M. pronus (clavicornis), with which they are associated both by Erichson and Kraatz? If they be true Mycetopori, why not place them at the head of the genus, as affording a better link to Boletobius than any other of their associates? indeed, it seems to me very doubtful whether their general structure would not warrant their being placed in the last-mentioned genus, near B. inclinans. The palpi are not sufficiently distinct to afford a cause for generic distinction, and the antennæ exhibit a very similar structure to that insect, whilst they are quite different from the other species of Mycetoporus. Boletobius also already includes species with the front tarsi in the males both dilated and not dilated; and both genera comprise insects in which the punctuation of the elytra is either scattered or in the form of single striæ.

MYCETOPORUS NANUS, *Grav. Mon.* 28, 8 (Tachinus). *Erichs. Gen. et Spec. Staph.* 286, 7. *Kraatz*, *Ins. Deutschl.* ii. 463, 10.

I have recently detected the above species among some Coleoptera taken by Mr. A. Haward, near Croydon. Its very small size prevents it from being confounded with anything but M. clavicornis (M. pronus, *Erichs.*) and M. angularis, *Mulsant*, from the former of which it may be known by its more parallel shape and much narrower antennæ; also by having the abdomen less strongly punctured, by the large punctures on the anterior part of the thorax being closer to the front margin, and particularly by an accessory stria of punctures on each elytron, commencing at the apical margin, and running upwards for nearly the whole length of the elytron parallel to the dorsal row, and between the latter and the sutural stria. It may be as well to remark here, for the benefit of those who happen not to have examined the elytra in these insects, that the normal three rows of punctuations referred to by the authorities are situated as follows:—one along the outer reflexed margin, one running parallel with and close to the suture, and an intermediate or dorsal row parallel to both and rather nearer the outer edge than the suture. From M. angularis the present insect may be known by its shorter elytra, and by the presence of the accessory row of punctures above mentioned. These three species have no oblique punctures on the sides of the thorax, but Fairmaire (*loc. sup. cit.* 493, 5) erroneously includes M. angularis in a section of the genus which he specifies as possessing these punctures. The normal colour of M. nanus appears to be black, with the apex of the elytra rufo-testaceous, but it seems to vary considerably in this respect, having sometimes the thorax and elytra pitchy, rufo-piceous, or testaceous, with the head darker. The British specimen I have examined is a small example of one of those varieties, being rufo-piceous, with the head and abdomen darker, the latter having the hinder margins of the segments and the entire apical segment testaceous. There appears to be another small species closely allied to M. nanus, also possessing a reduplicated dorsal stria, but not yet recorded as British; I allude to M. tenuis, *Mulsant.* This species is more linear in shape, more uniformly (and I believe invariably) light in colour, the joints of the antennæ more transverse, and the accessory dorsal stria more complete.—*E. C. Rye;* 284, *King's Road*, *Chelsea*, *May* 9, 1863.

Proceedings of Societies.

ENTOMOLOGICAL SOCIETY.

May 4, 1863.—FREDERICK SMITH, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors:—'The Transactions of the Linnean Society of London,' Vol. xxiii. Part III., Vol. xxiv. Part I.; presented by the Society. 'Bulletin de la Société Linnéenne de Normandie,' Vols. i.—vii., 1855—62; by the Society. 'Annales de la Société Entomologique de France,' 3e Serie, Vol. iii., Trim. 2—4, 1855; Vol. vii., Trim. 1—4, 1859; Vol. viii., Trim. 1—4, 1860; 4e Serie, Vol. i., Trim. 1—4, 1861; Vol. ii., Trim. 1—4, 1862; by the Society. 'Descriptions of Twenty New Species of Australian Coleoptera belonging to the Families Cicindelidæ and Cetoniidæ,' 'Descriptions of Twenty New Species of Buprestidæ belonging to the Genus Stigmodera, from the northern parts of Australia,' by William MacLeay, jun., Esq., M.L.A.; by the Author. 'The Intellectual Observer' for May; by the Publishers. 'The Zoologist' for May; by the Editor. 'The Journal of the Society of Arts' for April; by the Society. 'The Athenæum' for April; by the Editor. 'The Reader' for April; by the Editor. 'The Weekly Entomologist' for 1862—3; by the Editor. A Collection of upwards of 100 Volumes of Works on Bees and Bee-keeping; deposited in the Library by the Apiarian Society, on certain conditions embodied in a Minute of Council dated the 6th of April, 1863.

Exhibitions, &c.

Mr. S. Stevens exhibited a collection of insects from the Feeje Islands, consisting principally of Coleoptera, and comprising many new species; also a collection from Madagascar, sent home by Mr. Plant, containing Coleoptera and some fine Lepidoptera, conspicuous amongst which was a new Diadema; also a collection from the Cape of Good Hope, sent by Mr. Trimen; also some spiders of enormous size from

Bogotà; and a single specimen of a Coleopterous insect received from Australia, which appeared to be precisely identical with the British Sinodendron cylindricum, and which, it was suggested, had probably in the larva state been imported into Australia from this country, in wood.

Mr. M'Lachlan exhibited the case of a caddis-worm (a species of Limnephilus), which was almost entirely composed of from 250 to 300 minute shells of a Planorbis, arranged with the utmost regularity, so as to resemble a piece of mosaic.

Mr. Edwin Shepherd exhibited specimens of Biston betularius, which had been raised from eggs forwarded to him from Lancashire by Mr. Edleston. In the course of last year Mr. Edleston had found a pair of that species *in copulâ*, one of the specimens being of the usual gray colour, and the other of the black variety occasionally found in the North of England: the eggs forwarded were the fruit of that union, and Mr. Shepherd had succeeded in breeding twelve specimens of the perfect moth; of these, eight were of the normal colour, and four of the negro variety; ten of the twelve were females, and of the two males one was of the typical form and the other was a negro. The whole of the larvæ were fed on the same food, principally on lime leaves. It was remarkable that the negro variety had never been captured in the South, and that even in the North no intermediate forms had ever been met with to connect and link together the light gray type and the sooty black variety.

Mr. Waring exhibited some dead pupæ of drones, which he had found near the mouth of one of his bee-hives: the pupæ had not quite arrived at maturity, and it would seem that the bees must have cut off the caps of the cells containing them, and have cast them out of the hive. He was unable to throw any light upon the cause of the death of the pupæ.

Mr. T. W. Wood made some remarks on the mimicry of Nature by herself, as exemplified by the colouring of the under side of the wings of Anthocharis Cardamines, and on the utility of such mimetic resemblances in the preservation of insects. During the present month of May, towards evening or in cloudy weather, the orange-tip butterfly might be found at rest in exposed situations by the sides of roads and lanes, on the tops of grass and flowers, but more particularly on Anthriscus sylvestris, and almost always in the neighbourhood of that plant: the chequered white and green, which alone were visible when the insect was at rest, exactly represented the small white flowers of the Anthriscus, as seen against the green background of the hedgerow behind. It was remarkable also that the butterfly did not appear to be partial to the Anthriscus, except as a secure resting-place, but preferred to hover over and suck the juices of the wild geranium and other flowers.

Mr. Waterhouse exhibited British specimens of Oxypoda lentula, *Erichs.*, *Kraatz*, &c., Oxypoda misella, *Kraatz*, Trechus obtusus, *Erichs.*, and Bembidium (Philochthus) Mannerheimii, *Sahlberg*; and read the following notes on those species:—

"1. The Oxypoda lentula is about equal in size to the Homalota Fungi, and has antennæ with very nearly the same proportions as to length and thickness, but the elytra and basal half of abdomen are rather narrower, and hence the general form is more inclining to the linear. The colouring is dullish slaty black, reminding one of the Myllænæ in this respect; the antennæ and legs are piceous, the knees and tarsi a little paler than the other parts; the punctuation of the upper parts is very fine and dense throughout, a little less dense on the head; and the insect is densely clothed with fine ashy pubescence. In certain lights the elytra exhibit an indistinct faint brownish tint, and the apex of the abdomen is more distinctly tinted with brown. The thorax has a pretty distinct transverse fovea behind, and running forwards from this is a faint dorsal channel, which, however, disappears near the front of the thorax. The basal joint of the posterior tarsi (which are but of moderate length) is equal in length to the two following joints, taken together; and joints two, three and four are very nearly equal to each other. I have taken this insect in the Hammersmith Marshes.

"2. Oxypoda misella belongs to the little section of the genus, the species of which have the elytra shorter than the thorax. Of this section but two British species have hitherto come under my notice, *viz.*, O. annularis of Mannerheim and O. brachyptera of Kirby = O. ferruginea of Erichson. The species regarded as O. misella now exhibited was taken near Wickham, by Mr. Rye, and was at once separated by him from the other two species above named, in company with which it was found, through its dark colouring combined with its comparatively short antennæ. In the structure of the antennæ it most nearly resembles O. annularis, the terminal joint being short (very little longer than broad), as in that insect, and the intermediate joints being strongly transverse; but these organs are rather less stout in O. misella than in O. annularis, and are of a dark pitch colour, excepting at the base. The insect, moreover, is rather smaller, and its general colour is pitchy; the thorax and elytra, apex of the abdomen and the edges of the abdominal segments more or less rufous-piceous; the legs and base of the antennæ testaceous. O. annularis is entirely rufous-testaceous, with the exception of the head and middle of the abdomen, which are somewhat dusky. O. brachyptera is usually intermediate in its colouring between the above-mentioned two species; its antennæ, thorax, elytra, and the base and apex of the abdomen, are ferruginous. Here the antennæ, if bent backwards, would nearly extend to the apex of the elytra (the same organs would fall considerably short of the same point in the other two species); the intermediate joints are moderately transverse, and the terminal joint is fully twice as long as broad. The elytra are rather longer, and the punctuation is more distinct and somewhat rugulose, which is not the case in O. misella and O. annularis.

"3. Of the specimens of Trechus obtusus which are exhibited, one is from the Continent, having been kindly sent to me by Dr. Schaum; the second is British, and stood in my collection for many years under the MS. name 'lævis,' it having been so named by me and separated from the T. minutus, chiefly in consequence of the almost total obliteration of the striæ of the elytra. In the fifth volume of Stephens' 'Illustrations' (Mandibulata), and in the 'Manual' by the same author, an insect is very briefly described under the name 'T. lævis, *Waterh.*'; whether the description was taken from this specimen I am not aware, but as there is no insect in Stephens' collection to represent the species, the exhibited specimen is probably the original of the description. However this may be, it will be seen by the members present that the British specimen agrees perfectly with the continental one, and differs from T. minutus chiefly in having the elytra shorter, more convex and of an ovate form, the broadest part being in the middle, whilst in T. minutus the elytra are broadest behind the middle, and the striæ of the elytra being all obliterated, or very nearly so, excepting the three nearest the suture. In T. minutus there are at least four distinct striæ on each elytron. The last-named insect, moreover, is provided with perfect wings, whilst in T. obtusus the wings are rudimentary.

"4. For Bembidium Mannerheimii, recently detected by Mr. Rye amongst our British species, I have a new locality to record; the specimens exhibited were taken by me at Darenth Wood."

The Secretary read a letter from Dr. Hagen, of Königsberg, in which, after thanking the Society for having elected him one of its Honorary Members, he expressed a hope that British entomologists would assist him in rendering more perfect his recently-published 'Bibliotheca Entomologica'; if the entomologists of this country would communicate to this Society every error or omission, with respect either to the authors or their works, which they noticed in the 'Bibliotheca,' and such additions as from time to time became necessary, and the Society would communicate the same to him (Dr. H.), he trusted that, by the assistance and cooperation of this and other Societies, which had been requested to do likewise, a future edition of his recent work might be made a good foundation for a complete and perfect record of entomological bibliography.

The President mentioned that Professor Lacordaire, of Liège, in a letter returning thanks for his election as an Honorary Member, had enclosed a photograph of himself, in the belief that this Society, like that of France and other scientific bodies, was forming a collection of likenesses of its members. The Council had taken the subject into consideration, and having regard to the regret which was now felt at the absence of any such memorial of some of our distinguished entomologists (*e.g.*, the late James Francis Stephens), and to the interest which, after the lapse of a few years, would doubtless attach to such a collection, had determined to provide a proper book for the reception and preservation of photographs of such Members and Subscribers as would be kind enough to present their likenesses to the Society. He trusted that the existing Members of the body would readily respond to this invitation.

Special General Meeting.

The Secretary gave notice that a Special General Meeting would be held on Monday, the 1st of June, at 8 P.M. (or so soon thereafter as the business of the Ordinary Meeting should be concluded), to consider whether the Society's collection of British Insects should be retained or disposed of; and that at such Meeting Resolutions would be proposed with a view to carry into effect the recommendations to the Council, which were agreed to by the Library and Cabinet Committee at its meeting held on the 30th of March last.—*J. W. D.*

Clava multicornis.—Several clusters of this beautiful Polyp were brought to me on the 24th of March, attached to Fucus, which was found growing upon two pieces of rock at the Dingle. Mr. Byerley, in his 'Fauna of Liverpool,' speaks of it, on the authority of Mr. Price, as being "found on loose and floating Fuci washed into the Mersey." They were brought to me, with other specimens, by James Woods, a poor youth who is quite a genius in hunting for marine and freshwater specimens, by which he gains a precarious living, likewise many colds and much rheumatism.—*Thomas J. Moore, in 'Naturalist's Scrap Book,'* Part i. p. 5. [I am very much pleased to receive this useful and unassuming little journal, to which I wish every possible success: Liverpool entomologists should especially patronize it; to them it will be as useful as the 'Weekly Entomologist' to our entomological friends at Manchester.—*Edward Newman.*]

TO CORRESPONDENTS.

The present double number disposes of the greater part of communications in hand; a few still remain, with the signatures H. Blake-Knox, J. A. Brewer, E. W. H. Holdsworth, Thomas Clark, J. A. Harvie Brown, Thomas Thorncroft, H. L. Saxby, Henry Hadfield, William Bennett, A. W. Crichton, E. Horton, H. W. Kidd, R. J. Teffry, George Roberts, E. C. Rye, H. Harpur Crewe, J. W. Clutterbuck, S. P. Saville, H. Doubleday, J. W. May, G. H. Parke, H. T. Stainton, Thomas Brown, J. Pristo, P. H. Gosse, &c., &c. The notice of Dr. Jerdon's 'Birds of India' will appear in July.

BOOK RECEIVED FOR REVIEW. — 'A List of the Birds of Europe,' by Professor J. H. Blasius.

Dysdera erythrina.—I quite agree with Mr. Robertson that there is no *necessity* for his acknowledging the mistake he made about recording this spider as new; that is simply a matter of taste: but, on the other hand, there is certainly no necessity for the note he has written on the subject. The case is in a nutshell: Mr. Robertson says (Zool. 8172) he has discovered a spider new to Britain: Mr. Pickard-Cambridge says (Zool. 8202) that it had been *repeatedly* recorded as British prior to Mr. Robertson's capture. Had the case been mine I would have thanked Mr. Pickard-Cambridge for this information; or, supposing facts would bear me out, have controverted his statements: the latter alternative I believe impracticable; the former is therefore the one I should have adopted; but, as I said before, this is entirely a matter of taste.

Dianthœcia capsophila.—I have received a very long paper from Mr. C. S. Gregson, in reply to Mr. Barrett's note on this species (Zool. 8471). I decline to publish this paper, primarily because it is accompanied by a threat of the consequences of non-publication: I regret Mr. Gregson should so mistake me as to suppose I should be influenced by such threats; but as an additional cause for non-publication, I may state that Mr. Gregson's paper is entirely personal; it does not enter on the entomological question at all, and this surely ought to be the leading subject of his rejoinder. I am very reluctant on all occasions to publish anything like personalities, and would not have inserted Mr. Barrett's observations had I not considered him an injured man. The Northern Entomological Society—of which Mr. Birchall, the other entomologist concerned, is a member, and of which I also am a member—not only solemnly deliberate on the correctness of our views, but when we, with the assistance of Messrs. Guenée and Doubleday, pronounce Mr. Barrett's insect to be new, they as solemnly "decide it to be only a variety of Dianthœcia carpophaga," and print, publish and circulate their decision. I do not say that we are all right, and the Northern Society wrong, but I do say that any one of us was as fairly entitled to the right of reply as the Northern Society was to publish the adverse decision at which they had arrived. Moreover, many members of the Society will protest against the decision.

Second-hand Books.

EDWARD NEWMAN has second-hand copies of the following rare and valuable books for sale:—

	£	s.	d.
Yarrell's 'British Fishes,' the First Edition, very rare	2	10	0
'Entomological Magazine,' Vol. I.	1	0	0
'Entomological Magazine,' Vol. II.	0	7	0
'Entomological Magazine,' Vol. III.	0	10	0
'Zoologist' for 1861	0	18	0
'Zoologist' for 1862	0	18	0
'Entomologist,' 1840—2	0	14	0
Stainton's 'Insecta Britannica' (Tineina)	1	7	0
Haworth's 'Saxifragearum Enumeratio'	0	6	0

⁂ Haworth's 'Lepidoptera,' Kirby's 'Bees,' and both copies of the 'Entomologist,' previously advertised, are sold.

EDWARD NEWMAN, 9, Devonshire Street, Bishopsgate.

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Just published, price 1s. 6d.,

THE INSECT HUNTERS' COMPANION, including an Essay on 'Pupa Digging.' By the Rev. Joseph Greene, M.A.

A second large Edition of the 'Insect Hunters' is now rapidly selling, and from the number of letters I receive, I am ready to conclude that *every* purchaser writes to ask me some questions about catching, or killing, or preserving insects, or whether there is not some work describing the various processes. The following questions have been asked me times out of number:—Where to find moths and butterflies; how to catch them; how to bring them home without injury; how to kill them; how to set them; how to find the caterpillars; how to manage them; how to feed them; how to breed the perfect insects; where to find chrysalises; what to do with them; how to keep mites and mould out of cabinets; how to cure grease; how to relax insects when they have become stiff; how to arrange them in cabinets; what wood to use for cabinets; and a hundred similar questions. Replying to these questions has taken up more time than I can possibly afford, and there has hitherto been no cheap handy-book that will at all meet the case. I have often been compelled to refer to that portion of my 'Familiar Introduction' which treats expressly on these subjects, and to say, with a late celebrated physician, "You *must* read my book:" this I have always done reluctantly, because I have no desire to induce a beginner to lay out twelve shillings on a book, three-fourths of which he will not read until, by collecting and studying insects, he has acquired a desire to know more about them. Then, and not till then, will he appreciate all that I have written of their anatomy, history and classification. At first all that he requires is sound and simple practical advice on the subjects above mentioned, and it is to supply this want that Mr. Greene has written this little book, with the desire to impart to the juvenile student the knowledge and the experience which he has been so many years assiduously and patiently acquiring. He incurs no risk by the publication; he receives no gratuity for copyright, no recompense whatever for his labour: with him it is truly a labour of love.—*Edward Newman.*

John Van Voorst, 1, Paternoster Row.

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